

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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Flight

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DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the date of important fixtures are invited to send particulars for inclusion in the following list:

Nov.	Entrance Examination for R.A.F. College.
Dec. 3	"The Air Force." Lecture by Air-Commodore H. R. Brooke-Popham before R.U.S.I.
Dec. 19 to ...	Paris Aero Show.
Jan. 4, 1920.	
July, 1920	S.B.A.C. International Aero Exhibition at Olympia 1920
Mar. 1	Air Ministry Competition (Small Type Aero- planes)
Aug. 1	Air Ministry Competition (Seaplanes)
Sept. 1	Air Ministry Competition (Large Type Aero- planes)

EDITORIAL COMMENT

HIS MAJESTY THE KING has, in response to the appeal by Prince Albert, to which we referred last week, sent a donation of £100 to the Flying Services Fund, which is administered by the Royal Aero Club. We feel that it is hardly necessary again to emphasise the good work which is being done, and which remains to do, by the Fund. Nevertheless, we would again draw the

The King and the Flying Services Fund

attention of our readers to the urgent need which exists for immediate support if the Fund is to be able to carry out in its entirety the great task set for it to do. Money and more money is required for the maintenance of the dependents of those who laid down their lives in the struggle for freedom; for the support or assistance of the disabled; and for the education of the children left fatherless through the War. We beg once again for a generous response to Prince Albert's appeal for the Fund. The King's lead, and the example of Mr. Patrick Alexander's generous support with £1,000, might well find followers.

Mails by Air at Last

It has been officially announced that the Postmaster-General has made arrangements for the establishment of an air mail service between London and Paris. The service extends to Paris and the whole of France, Italy, Spain, Switzerland, etc., and was to have begun on Monday last, but bad weather postponed the opening until the following day. It is notified that registered and unregistered letters, postcards, packets of printed papers and commercial papers, and samples will be accepted for transmission. Parcels and insured correspondence will not be accepted. A special fee of 2s. 6d. per ounce is charged, in addition to the ordinary rates of foreign postage and the registration fee, where payable. The official notice gives particulars of the various London post-offices at which correspondence will be accepted for transmission by aerial mail service and the times up to which letters can be posted. These include most of the district offices, the G.P.O. and such central offices as Charing Cross, Parliament Street, Lombard Street, and Threadneedle Street. The times of posting vary slightly, from 10.45 a.m. to 11.10 a.m.

It is further announced that arrangements are being made at certain provincial post-offices for acceptance of mail matter intended for aerial transmission. Such correspondence will be forwarded to London as "express" letters, and will be forwarded by aeroplane on the following morning. It will normally arrive in Paris in time for delivery during business hours on the same day. Correspondence addressed to Paris will thus be accelerated by about sixteen hours, while that for countries beyond France will be accelerated by as much as twenty-four hours.

In the inward direction, correspondence posted in Paris in the morning will normally reach London in time for delivery in the central districts during business hours on the same day, and will be delivered on arrival by express messengers without additional charge. Correspondence for provincial towns is forwarded by the next despatch from London, and will usually gain twenty-four hours in delivery. If it is known in advance that flight will be impossible on any day, a notice to that effect will be exhibited in the offices where correspondence is accepted for aerial transmission. Responsibility for registered correspondence will be admitted under the usual conditions, otherwise correspondence will be accepted at sender's risk.

These points cover all the essential conditions of the new service, and, belated as the decision seems to be, we congratulate the Postmaster-General on having at last realised the potential value of an aerial service as an aid to the quicker transaction of business. There is one point, however, on which we are by no means in accord with the official conditions of the service. Why half-a-crown an ounce, in addition to the amount of the foreign postage? It seems to us that this will militate very greatly against the success of the venture. If it were necessary we should be content to accept it as one of the disabilities inseparable from pioneering a new mode of transport. But it is not necessary, because it has been shown by figures which are beyond dispute that such a service can be made in due time to pay its way and show a profit at sixpence per ounce. Far better to charge the latter figure and carry, let us say, fifteen hundred sixpenny letters than one hundred at half-a-crown. Even if it were not possible to make an immediate profit on such a basis, surely it is up to the Post Office to run the service anyway as an encouragement to civil aviation. We have heard a great deal about the amount of such encouragement the Government intends to give the new movement, but when it comes to the test it seems that the departments with the best opportunity of affording it adopt the rule of Shylock, and will do nothing except in return for their pound of flesh.

The Future of Aviation in the United States A most interesting document was issued as a Parliamentary Paper at the end of last week, in the shape of the Report to the United States Secretary for War of the American Aviation Mission which visited Europe last July. The Mission consulted, in England, France and Italy, Ministers, naval, military and Air Force authorities and other experts, and after a complete study of all the forms of organisation adopted by the three countries, seem to have returned to America with a deep-seated conviction that aviation must be encouraged by all possible means. They report that: "Immediate action is necessary to safeguard the interests of the United States, to preserve for the Government some benefit of the great aviation expenditures made during the period of the War, and to prevent a vitally necessary industry from entirely disappearing. Ninety per cent. of the industry created during the War has been liquidated. Unless some definite policy is adopted by the Government, it is inevitable that the remaining ten per cent. will also disappear."

This might just as well have been written about the state of the aviation industry in this country and of

the urgent need for the formulation of some concrete and definite policy by our own Government. That, however, in passing. The Mission recommends the "concentration of the air activities of the United States, military, naval and civilian, within the direction of a single Government agency created for the purpose, co-equal in importance with the Departments of War, Navy and of Commerce, called, for the purposes of identification, the National Air Service."

It is not a little significant that the American Mission should recommend thus definitely the adoption of a scheme of organisation of the United States Air Service exactly on the general lines of our own. It is axiomatic that the looker-on sees most of the game, and these American officers and officials who constituted the Mission, acute observers all of them, have manifestly studied very closely the organisations existing in the three countries to which they were accredited, and have deliberately arrived at the conclusion that our own Air Ministry organisation, faulty as it may be in certain details, is basically the one and only proper way of dealing with the matter they had under review. We need hardly say that this is a point of view in which we most wholly concur. Indeed, when it is remembered that it was this journal which took the lead in urging upon the Government the separation of the Air Service from the Navy and Army and its organisation under a single authority, it will be clear that we could do nothing else but agree. More especially is this the case when it is further remembered how the separate organisation justified itself during the last year of the War after dual control had well-nigh ruined our chances of victory in the air.

Points for American Government Consideration

The Mission seems to have been greatly impressed by the view taken here of the future of air power, and its influence on the course of the wars of the time to come. In their Report they say:—

Great Britain considers the dominance of the air as important as that of the seas, and is avowedly planning a definite policy of aerial development to that end. Owing to the co-ordination for more than two years of her aircraft activities, she is well in the lead in practically every phase of aerial development.

In any future war victory must incline to the belligerent able first to achieve and later to maintain supremacy in the air.

In England, France and Italy sentiment is undoubtedly in favour of the centralisation of aircraft development under one authoritative head. Difference of opinion has been encountered only in the matter of Army and Navy personnel and in the question of the independent fighting force. England holds the initiative, and is building her Royal Air Force co-equal with the Army and Navy.

With proper Governmental encouragement, rapid progress in the development of aircraft seems inevitable. There is vital need for the United States to formulate a definite, comprehensive, and continuing policy for its development in every phase.

Great Britain's plan of organisation is not perfect, but undoubtedly it stands today the most comprehensive Governmental mechanism yet set up by any nation for the encouragement, upbuilding, direction, and control of its air resources. This organisation has been born of five bitter years of trial, mistake, experience, and progress. It is the product of the best brains in the British Empire focussed under the spur of national need and the demand of the British people. America may well study it carefully.

In so far as concerns the first paragraph of this quotation, we sincerely trust that the impression made upon the Mission was conveyed by responsible Ministers of the Crown. We are fully aware that it represents the opinions of the bulk of the officers of



MR. A. M. RAMSAY, Director and General Manager, British Caudron Co., Ltd.

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the Air Service and of the civilian observers who have given thought to the problems of the future of aviation, civil and military. Whether these opinions coincide with those of the Government, which is responsible for finding the wherewithal to ensure the requisite margin of air-power, we are not so sure when we regard what is taking place today. The R.A.F. is being ruthlessly cut down, and the encouragement of civil aviation, of which so much was said a few months ago, seems tardy in materialising.

Still, it is flattering to our national pride to find that the Mission acknowledges that Britain possesses the pattern organisation on which others will do well to mould their own. After all, it would seem that in the eyes of others we are not the laggards we sometimes think ourselves.

The Secretary for War, Mr. Newton Baker, does not agree with the Mission in the matter of the single centralised Air Service. He thinks that army and navy aviators are specialists in the art of flying, and that the pilots required are of a different type from those needed in civilian undertakings. Moreover, he contends that they need to be trained upon a different theory. It seems to us to be fairly clear that Mr. Baker has come under the influence of the same types of reactionary officers with whom we have been afflicted here, and who would, if they could have their way, revert our own Air Service to the separate controls from which it suffered during nearly four years of war. He should remember that we have been through the experience, and that it did not work out. We changed it in the middle of a great war, and it succeeded. Surely that must count for a great deal. Further, the conclusions of the Mission were arrived at after a close study of the conditions obtaining in three countries, while Mr. Baker's views are simply expressions of opinion gathered at second hand. We have no desire to commit the impertinence of criticising the views of a foreign authority on domestic matters, and we have only registered these remarks for the reason that the views in question are certain to be seized upon at some convenient season by our own reactionaries.

Commercial Flying

In that part of the Report dealing with commercial flying the Mission points out that adequate support cannot be expected from private enterprise alone, and if no Government aid is given ten years will probably see the industry in America struggling for a foothold and far behind its state-aided competitors in Europe. Its remarks on the best manner of development for all purposes are worth quoting, since they might be addressed to ourselves equally with the United States. On this the Mission says:—

That the single Government agency proposed above (consisting of a civilian Secretary for Air, a civilian Assistant Secretary, five or more divisional heads, and an advisory Air Council) be charged with full responsibility for placing

Resignation of General Seely

It was announced on Tuesday that Major-General J. E. B. Seely, the Under-Secretary of State for Air, had resigned, and that he was going over to the ranks of the Opposition. It is understood that he intends to make a big fight for the future position of civil and military aviation in this country.

In a statement in the House on Wednesday General Seely said he found the dual control of the Air Service would not work. He asked to be relieved of his office before the end of the War, but was asked to remain.

and maintaining the country in the front rank among nations in the development and utilisation of aircraft for the national security, and in the advancement of the civil aerial transportation and communication arts.

The adoption of a system whereby Army, Navy, and civil *personnel* can be circulated in proper proportion through the National Air Service. This *personnel* would, unless permanently assigned to air work, be automatically returned to the military and naval sources, or to civil life as an Air Service Reserve, after the educational and service periods in the National Air Service have expired.

In a word, what the Mission urges is that the best and most economical method of providing for aerial defence is in the building up of just such a Flying Reserve as we have insisted upon as being the best line of policy to be pursued in this country. Comment would be superfluous.

Other Recommendations

Not less interesting are the recommendations as to the detailed manner in which the Government should undertake the work of encouragement. It is sufficiently clear that these recommendations have been based on our own suggested organisation, altered a little in detail to suit the different conditions existing in America. These again are well worth quoting, so we need make no apology for so doing. The text of these recommendations is as follows:—

Airships are now building in England which will be able to carry from 5 to 10 tons of mail, in addition to the necessary fuel and crew, and cross the Atlantic from London to New York in one-half the time made by the fastest steamships.

England is already desirous of organising with the United States a Transatlantic airship line for mail service which would give a five-day mail service from London to San Francisco. Such a service is entirely possible at this time, and its inauguration depends only upon adequate encouragement and financial support.

The risks involved in these ventures, due to unknown conditions of the atmosphere, imperfections of equipment, etc., are still so great as to make them impracticable from the point of view of private enterprise undertaken for a profit.

The most economical way to develop a strong air service for national defence is to encourage, by every means possible, the use of aircraft for commercial purposes, and thereby build up a commercial fleet at relatively small expense to the Government, which would effectively supplement its strictly military equipment in time of need. Aircraft facilities and *personnel*, and particularly production facilities and technical *personnel*, cannot be obtained upon short notice, but only by long and continued experience and at great expense.

America's production industry does not require a large volume of business to keep it alive and healthy, but it does require a steady and dependable demand, otherwise private capital and enterprise will not long remain interested.

Here again these recommendations are so clear and speak so well for themselves that they call for no comment. We need only repeat that their general lines follow, in most places, the suggestions which have been made for the conduct of civil aviation here, and where they do not they are none the less admirable and worthy of careful consideration by our own authorities.

In the end, added General Seely, the Prime Minister said he had decided to maintain the existing plan and did not propose to vary it.

The Controller-General of Civil Aviation

THE rumour which found its way into some of the Sunday papers that Maj.-Gen. Sir Frederick Sykes had resigned his position as Controller-General of Civil Aviation was promptly followed by an official announcement that there was no truth in the statement. It is added that he has no intention of resigning, but that he is leaving this week for America on official Air Ministry business.



Southport, taken from a Sopwith " GNU " 'plane

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THE FLIGHT TO AUSTRALIA

In our last issue we published scale drawings and brief descriptions of the machines entered by Messrs. Vickers, Ltd., and by Messrs. Martinsyde, Ltd., for the flight to Australia. Also a brief description of the Alliance machine. Scale drawings and a description of the Sopwith machine were published in our issue of October 16, 1919. This week we are able to complete the list by giving particulars and scale drawings of the remaining machine—the Blackburn "Kangaroo." The only machine to start so far is the Sopwith "Wallaby," which left Hounslow on October 21. This machine had to descend at Cologne, from which town a start was made again on October 31. Since then no news has been received from Capt. Matthews, but it is thought that he is weatherbound somewhere, far from any telegraph office, and no anxiety is felt for his safety.

Of the five machines entered for this flight three are of the single-engined tractor biplane type, while the other two are twin-engined machines. Whether or not any of the machines succeed in winning the £10,000 prize offered by the Australian Government—the conditions for which stipulate that the flight must be completed inside a month—some very valuable data should result, and it will be interesting to see which type of machine acquits itself the better, the single-engine or the twin-engined type. Both have their champions, who are convinced of the superiority of their own class of machine. The "twin-engineites" consider that two engines tend to more reliability, since in the case of one breaking down it only means one-half of the power plant out of commission. The other faction contends that a twin-engined machine cannot fly satisfactorily on one engine only, and that therefore no such safeguard is provided by fitting two engines, while they claim greater efficiency for the single-engined type. Time will show which side is right, although there is such a great element of luck in a flight like this that failure on the part of one type and the success of another will not necessarily be conclusive proof of the superiority of one type over the other.

The Blackburn "Kangaroo."

Except in a few minor respects the Blackburn "Kangaroo" entered for the Australia flight is similar to the standard machine of that name. The tankage has been increased so as to give the machine a greater range of flight. This has been made possible by the fact that whereas the standard machine (commercial) carries eight passengers with its normal complement of tanks, the Australian machine carries a crew of four. The petrol system has been redesigned for gravity feed so as to minimise the risk of engine trouble arising out of failure of the petrol system.

The two 275 h.p. Rolls-Royce Falcon engines are mounted on the lower plane, each driving a four-bladed tractor airscrew. The large petrol tanks are mounted inside the main fuselage, in the space ordinarily occupied by the passengers in the cabin type of machine. The landing wheels are exceptionally well sprung by telescopic struts and rubber buffers, and the machine is expected to be able to alight safely on grounds none too suitable for the purpose. Certainly, at the

E.L.T.A. aerodrome at Amsterdam, on the occasion of the recent aero show there, the Blackburn "Kangaroo" made light of the soft condition of the ground, which was such as to worry much lighter machines.

Needless to say, a number of smaller spare parts are being carried on board, and the machine is not altogether unarmed, should natives show signs of hostility.

No actual figures as to range, speed, etc., are available, but the passenger type of machine has a speed range of 97 to 51 m.p.h., a flight range, with normal tanks, of 580 miles, and carries a load of eight passengers or 1,540 lbs. By decreasing the number of passengers to four, and increasing the tank capacity, the flight range can, of course, be very materially increased.

The Route

The route followed will probably be as follows, although should conditions demand this may be deviated from: Hounslow to Paris, Marseilles, Nice and Pisa to Rome. Thence to Cattania, Malta, Benghazi and Sollum to Aboukir. Ramleh, Bagdad, Basra, Bushire to Bandao-Abbas. Charbah, Karachi, Nasrabad, Allahabad to Calcutta. Rangoon, Don-Muang, Sengora, Penang, Kuala-Lumpur to Singapore. Bandoeng, Bima, Kupang to Port Darwin. Thence via Brisbane and Sydney to Melbourne. Petrol supplies are being arranged for by the Air Ministry and foreign Governments as far as Calcutta—thereafter the arrangements are in the hands of the Asiatic Petroleum Co.

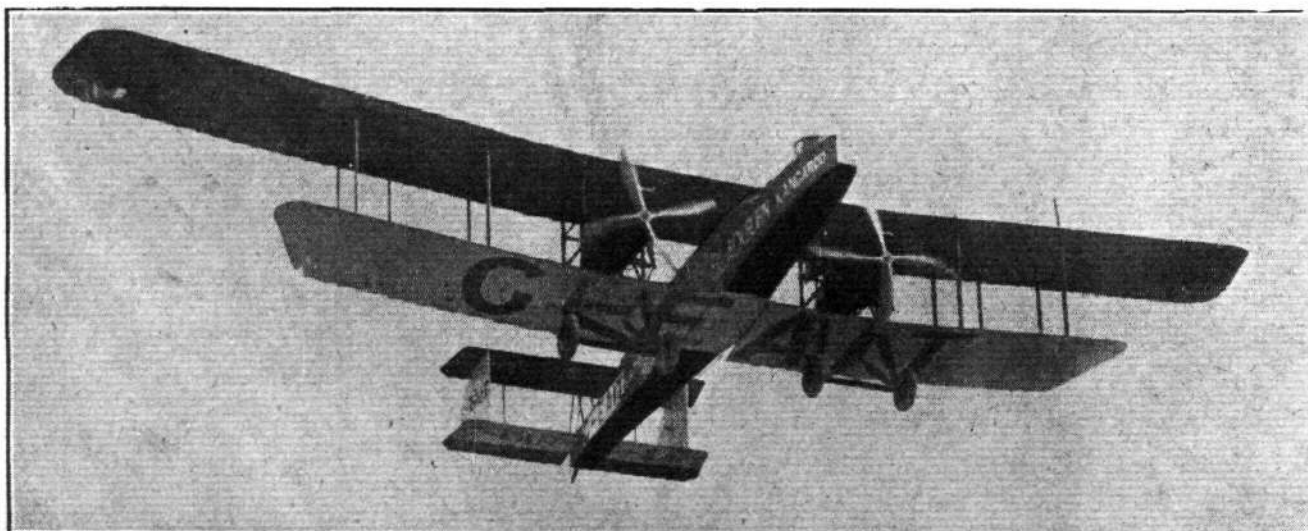
The Crew

Capt. Geo. H. Wilkins, M.C. and bar :—Commanding officer and navigator. Second in command of the Stefanson Arctic expedition, 1913-1917. Engaged with Historical Section, Australian War Records, as official photographer, A.I.F., France, Gallipoli and Palestine from 1917. War correspondent with Turks in Balkan War, 1912-13. Three years as Temp. Commander, Canadian Naval Service. Is under agreement as Chief of Scientific Staff of the Cope British Imperial Antarctic expedition, which will leave England about the middle of 1920. Has personal knowledge of practically every country in the world.

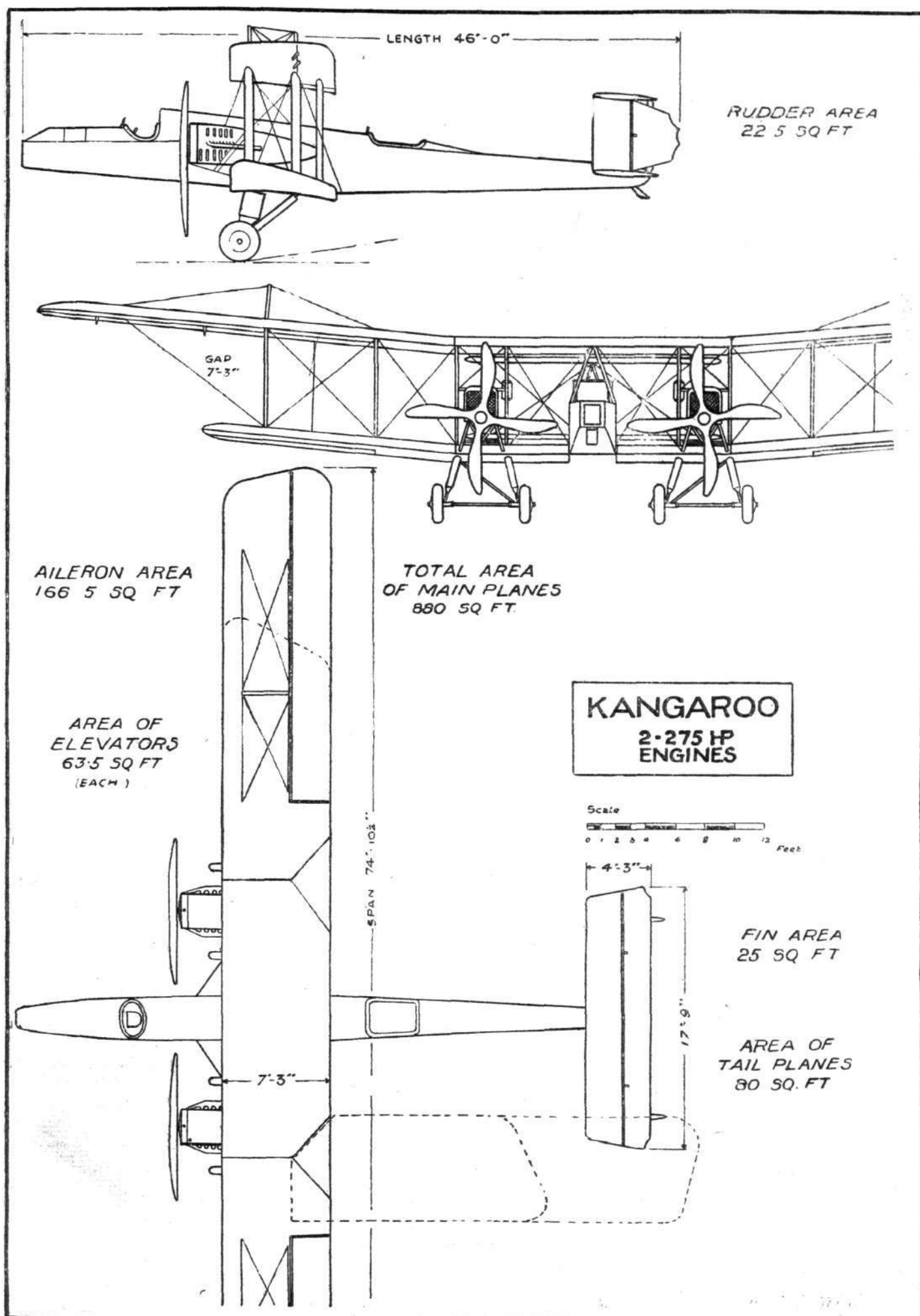
Lieut. D. R. Williams :—Second pilot. Fourteen years' experience as automobile engineer in N.S.W. Instructor at the flying school at Richmond, N.S.W. Ferry pilot and instructor with A.F.C.

Lieut. G. H. Potts :—Engineer officer. Son of the Principal, Hawkesbury Agricultural College, Richmond, N.S.W. Electrical engineer with the Australian General Electric Co., Sydney. Gunnery officer, A.F.C., served with No. 3 Squadron, A.F.C. in France.

Lieut. Val. Rendle :—First pilot. Son of Richard Rendle, F.R.C.S. (Eng.), of Brisbane. Assistant electrical engineer with the Australian Meat Export Co., Balmain, Brisbane. Joined Queensland Volunteer Flying Corps, founded by T. Macleod in 1915. Came to England and enlisted (March, 1916) as air-mechanic, R.F.C. Commissioned to R.F.C. in 1917, and served in England and France as instructor test pilot and ferry pilot.



THE FLIGHT TO AUSTRALIA : A Blackburn "Kangaroo," similar to the machine to be used, in flight.



THE FLIGHT TO AUSTRALIA: The Blackburn "Kangaroo." Plan, side and front elevations, to scale

AERODROMES AND LANDING GROUNDS

THE Air Ministry announces that the following lists of aerodromes are issued as an addition to or amendment of the lists recently published:—

LIST C.—*Aerodromes temporarily retained for Service purposes.*
Amendments.

The following aerodromes have been transferred to List E, and are now published in that list:

Aerodrome.	Nearest Station.	Nearest Town.
Leighterton..	Tetbury ..	Stroud.
Lopcombe Corner ..	Grateley ..	Salisbury.
Rendcomb ..	Foss Cross ..	Cirencester.

LIST D. (a) *Aerodromes licenced for all types of aircraft.*

Aerodrome.	Location	Nearest Town.
Cricklewood ..	Cricklewood ..	London.

LIST D. (b) *Aerodromes licenced as "Suitable for Avro (504 K) and similar types of aircraft" only. Except in very few instances accommodation does not exist. The licences have also in the majority of cases been issued for limited periods.*

Aerodrome.	Location	Nearest Town.
Billesley ..	Yardley Wood Rd.	Birmingham.
Altrincham ..	Woodlands Park	Altrincham.

Rugby ..	Polo Grd. : Spring Hill Farm	Rugby.
Chester ..	Race Course ..	Chester.

LIST E.—*Stations no longer in use by R.A.F.*

These stations have been passed to the Government Property Disposal Board. They will be relinquished as soon as the Government property thereon has been disposed of. In many cases the aerodromes are now under cultivation, but it is probable that the sites still form the best emergency landing-grounds in the immediate neighbourhood.

Aerodrome.	Nearest Railway Station.	Nearest Large Town.
Leighterton ..	Tetbury ..	Stroud.
Lopcombe Corner ..	Grateley ..	Salisbury.
Rendcomb ..	Foss Cross ..	Cirencester.
Southport ..	Hesketh Park ..	Southport.
Turnhouse ..	Turnhouse ..	Edinburgh.

THE BRITISH AIRCRAFT COMPETITIONS, 1920

IN connection with the British Aircraft Competitions for prizes amounting to £64,000, the following list of engines for use by competitors has been approved by the Air Council. It will be left to the discretion of the judges to decide whether any new engine not included in this list fulfills the conditions of the competition:—

A.B.C. (all types).	Galloway Pacific.
Beardmore (160 h.p.)	Green (all types).
B.H.P.	Napier Lion.
B.R. 1.	R.A.F. (all types).
B.R. 2.	Rolls-Royce (all types).
Cosmos (all types).	Siddeley Puma.
Galloway Adriatic.	Sunbeam (all types).
Galloway Atlantic.	Wolseley Viper.

The competitions will be held commencing on the following dates:—

Aeroplanes, small type ..	March 1, 1920.
Aeroplanes, large type ..	September 1, 1920.
Seaplanes (amphibians) ..	August 1, 1920.

The places at which the competitions will be held will be announced later.

Competitors must enter machines on or before the following dates:—

Aeroplanes, small type ..	December 31, 1919.
Aeroplanes, large type ..	May 1, 1920.
Seaplanes (amphibians) ..	April 1, 1920.

The following publications in connection with these competitions will be available for issue towards the end of the month:—

- British Aircraft Competitions, 1920, Aeroplanes, Conditions and Tests (B.A.C. Form A).
- British Aircraft Competitions, 1920, Seaplanes (Amphibians), Conditions and Tests (B.A.C. Form B).
- British Aircraft Competitions, 1920, Notice to Competitors (B.A.C. Form C).
- British Aircraft Competitions, 1920, Rules and Regulations (B.A.C. Form D).
- British Aircraft Competitions, 1920, Entry Form (B.A.C. Form E).

These papers will be obtainable from H.M. Stationery Office or from the Secretary (C.A.L.), Air Ministry.

The London-Australia Flight

THE Vickers-Vimy machine, fitted with two 250 h.p. Rolls-Royce Eagle 8 engines, which has been entered for the £10,000 prize offered by the Australian Government for a flight to Australia, left Hounslow at 9.10 on Tuesday

morning. The pilot was Capt. Ross Smith, and he was accompanied by Lieut. K. M. Smith, Sergt. J. M. Bennett and Sergt. W. H. Shiers. The marking of the machine was carried out on behalf of the Royal Aero Club by Maj. R. H. Mayo and Lieut.-Comdr. H. E. Perrin.



An Interesting French Parasol Monoplane: Although the Parasol type of monoplane had a comparatively short vogue during the War, the type has many advantages, and it is more than probable that it will be revived for civilian flying. Our photograph shows the French Gourdon-Leseurre, fitted with 180 h.p. Hispano-Suiza engine. It will be noted that the wing bracing is unusual, struts being employed instead of the usual lift wires. This obviates the necessity for anti-lift wires above the wing. The speed of this machine is said to be 260 kilometres per hour (about 135 m.p.h.)

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

"Daily Express" £10,000 Prize

A MEETING of the Advisory Committee on the *Daily Express* £10,000 Prize was held at the Club on Tuesday, November 4, 1919, at 3 p.m.

Present:—

Royal Aero Club: Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the Chair; Lieut.-Col. F. K. McClean.
Society of British Aircraft Constructors: Capt. P. D. Acland.
Air Ministry: Lieut.-Col. W. O. Raikes.
Daily Express: Maj. W. E. G. Murray.
Lieut.-Com. H. E. Perrin, Secretary (Royal Aero Club).

The main features of the Competition were decided, and the drawing up of the Regulations was referred to the Technical and Competitions Committee.

SPECIAL COMMITTEE MEETING

A Special Meeting of The Committee was held on Wednesday, November 5, 1919, when there were present:—Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the Chair; Mr. Ernest C. Bucknall, Squadron-Leader T. O'B. Hubbard, M.C., R.A.F., Lieut.-Col. F. K. McClean, Lieut.-Col. Alec Ogilvie, and the Secretary.

Election of Members.—The following New Members were elected:—

Lieut. Harold William Russell Banting.
Cecil Thomas Chandless Chandless.
Geoffrey Kitchin.
John Frederick William Lennard (late Major R.F.A.).
Arthur Newman (late Captain R.A.F.).
Flight-Lieut. Sydney Gerald Nicholson, R.A.F.

Temporary Honorary Membership.—Maj. Melvin Adams Hall, D.S.O., Air Attaché, American Embassy, was elected a temporary Honorary Member of the Club.

Fédération Aéronautique Internationale.—Lieut.-Col. Mervyn O'Gorman attended and presented a report of the Conference of the Fédération Aéronautique Internationale held at Brussels on October 22, 23 and 24, 1919.

On the motion of the Chairman, seconded by Mr. Ernest C. Bucknall, a unanimous vote of thanks was passed to the delegates who attended the Conference on behalf of the Club.

Presentation to Sr. Janello.—It was decided to make a presentation to Sr. Janello, in recognition of his performance in the Schneider Race at Bournemouth, and the form of the presentation was to be considered at the next Meeting of The Committee.

Log Books for Pilots and Aircraft.—Letter was read from the Air Ministry asking for a representative of the Royal Aero Club to attend a Meeting to discuss the proposed new log books for pilots and aircraft, and the Secretary was instructed to represent the Club.

FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

Report of the Conference at Brussels on October 22, 23 and 24, 1919

A Conference of the Fédération Aéronautique Internationale was held at Brussels on October 22, 23 and 24, 1919.

In the absence of Prince Roland Bonaparte, who was ill in Paris, M. Jacobs, President of the Aero Club of Belgium, was voted to the Chair.

The following countries were represented at the Conference: America, Belgium, Brazil, Denmark, France, Great Britain, Holland, Italy, Japan, Norway, Portugal, Sweden, Switzerland.

The delegates who attended on behalf of Great Britain were: Lieut.-Col. F. K. McClean, Lieut.-Col. Alec Ogilvie, Lieut.-Col. Mervyn O'Gorman, C.B., Mr. Harold E. Perrin (Secretary).

The principal business of the Conference was the revision of the Statutes and Regulations of the Federation.

The revision of the Statutes and Regulations had been under the consideration of a Special Committee under M. Surcouf. The report of this Committee which was presented to the Conference had been fully considered by the Royal Aero Club, and the suggestions put forward by the Club were in nearly every case accepted.

As regards the Schneider Cup, the decision of the Stewards of the Meeting in not awarding the Trophy to Italy was

upheld. The British delegates, on behalf of the Royal Aero Club, agreed to a suggestion that the Race for 1920 should be held in Italy, and, with the sanction of the Aero Club de France, this was approved by the Conference. The Royal Aero Club also agreed to loan the Schneider Trophy to the Aero Club of Italy for exhibition on the occasion of the Race.

Six Commissions were appointed, viz.:—

1. International Review of the Fédération Aéronautique Internationale. Secretary: M. Blondel la Rougery.
2. Medical. Secretary: Dr. Van Kulfen Galthé.
3. Aerial Touring. President: M. Mercanti.
4. Technical. President: Lieut.-Col. Mervyn O'Gorman, C.B. Secretary: Lieut.-Col. Alec Ogilvie.
5. Aerological. President: M. Jacobs. Secretary: M. Jaumotte.
6. Aeronautical Laws. President: M. Clunet. Secretary: M. Imbrecq.

The question of international records was fully considered by the Conference and the revised Regulations to take effect on January 1, 1920, will be issued shortly.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated while on duty, and for the widows and dependants of those who are killed or die from injuries or illness contracted while on duty.

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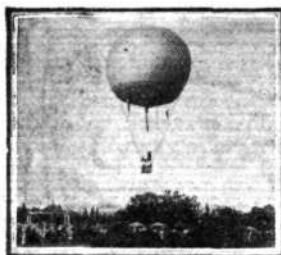
Subscriptions:

	£	s.	d.
Total subscriptions received to Sept. 16, 1919	15,124	12	1
His Majesty The King	100	0	0
H.R.H. Prince Albert, K.G.	21	0	0
Patrick Y. Alexander	1,000	0	0
Louis Coen	10	10	0
Mrs. Huntington and Miss Studholme	85	0	0
Miss W. Hudson	0	2	6
Sec. Lieut. C. H. J. Evershed	2	2	0
A. F. Brodie James	5	0	0
Received by Rev. J. R. Walkey for War Charities	2	0	0
George E. Miles	0	10	6
Royal Air Force Station, Isle of Grain	1	0	0
John S. Gibb	3	0	0
James Hillier	1	1	0
F. E. Simpson	5	5	0
Capt. J. P. Gurdon	5	0	0
J. Entwisle	5	0	0
H. Williams	5	5	0
Lord Foley	20	0	0
Maj.-Gen. Brooking	10	0	0
Japp Hatch and Co.	5	5	0
Rev. and Hon. E. R. Lindsay	1	0	0
Westland Aircraft Works	10	10	0
C. R. B. Caldwell	10	0	0
From the estate of the late Lieut. Owen Vincent			
Le Bas, R.F.C.	92	0	0
Arthur H. Leslie Melville	5	5	0

Total, November 10, 1919 16,530 8 1

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.



AIRSHIPS



AIRSHIP ENGINEERING PROGRESS IN THE UNITED STATES

By J. C. HUNSAKER, Eng. D., Commander, Construction Corps, U.S. Navy

(Continued from page 1456.)

C Class Airships

AFTER the completion of the B class ships, there was an almost complete stop to airship work in the United States, and an improved single-engine type which was designed in the winter of 1917-18 was not built. The reason for this was a discouraging report from abroad as to the effectiveness of airships on anti-submarine patrols. But the conclusions drawn from airship operations abroad in the bad winter weather proved to be premature, and as the good weather of the spring of 1918 permitted English and French airships to operate more freely, it became apparent that we should proceed immediately with a larger and faster type. Using this time all of the practical experience gained at home with B class ships and detailed information from abroad with regard to British, French and Italian airships, the Bureau of Construction and Repair undertook to take a step in advance and to design a ship of maximum performance. Full use was made of all available sources of information. In the initial stages of the design, the data regarding the performance of British airships, obtained from the British Admiralty through Lieut.-Comdr. P. L. Teed, R.N.V.R.—attached to the office of the British Naval Attaché at Washington—was especially helpful.

Experience showed the advantages of high speed to cope with winds, great endurance to follow convoys long distances, and a duplicated power plant to lessen chances of complete breakdown at sea. The C class was designed with these ends in view.

To obtain high speed, a new form of envelope and a car of very low resistance were developed from wind tunnel experiments. The speed was to be obtained by a combination of high power with the utmost refinement in design to keep down resistance. Twin engines were used, giving a total of 250 b.h.p. The actual speed on trial was 60 m.p.h., making probably the fastest airship of its size ever built.

The principal dimensions and characteristics of the C 5, as weighed off before her start for Newfoundland, were as follows:—

Length	192 ft.
Diameter	41 ft. 9 ins.
Volume	182,000 cub. ft.
Purity .. 98.6 per cent.	Total lift 12,700 lbs.
Temperature 65° Fahr.	
Barometer .. 30 ins.	

Weight empty	7,940 lbs.
Weight carried—	
Crew (six men)	1,015 lbs.
Fuel	3,250 lbs.
Oil	120 lbs.
Navigating equipment	25 lbs.
Radio	250 lbs.
Food	15 lbs.
Water for drinking	85 lbs.
Ballast	0 lb.
Useful load	4,760 lbs.
Endurance at 45 m.p.h., 47 hours, or ..	2,150 miles.
Endurance at 55 m.p.h., 28 hours, or ..	1,540 miles.

During 1918 contracts were placed with Goodyear and Goodrich for 30 airships, the cars to be supplied from the Burgess Co., Marblehead, Mass. After the Armistice contracts were reduced to 15 ships.

C 1, the first ship, was completed in September, 1918, and on October 22, 1918, flew 400 miles from Akron to Washington in 8½ hours. It flew over the Navy Department building, and landed at Anacostia to permit an inspection by officers of the department. It then proceeded to Rockaway, Long Island. Later in the year, the C 1 was ordered to Key West, and flew down the coast, stopping at intermediate air stations.

The C 5 on May 14, 1919, flew from Montauk to Newfoundland with six men in 25 hours 50 mins., a distance of 1,022 nautical miles on char' without stop. This flight will remain for a long time as a notable achievement. The distance actually flown (not being in a straight line) was about 1,200 nautical miles, or very nearly the distance from Newfoundland to the Azores.

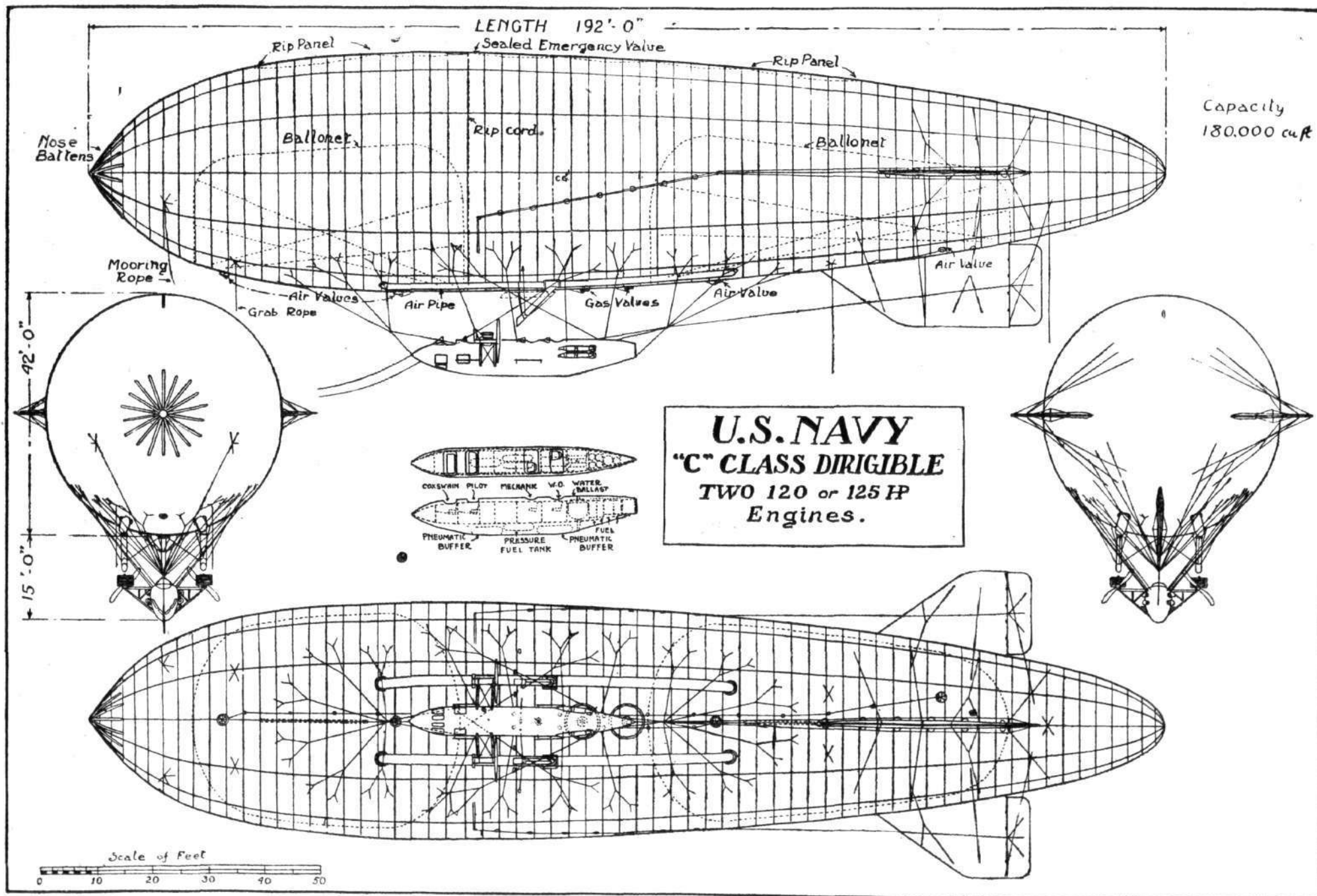
The C 5 was unfortunately lost at Newfoundland in a gale while moored out in a field, and was, therefore, unable to attempt the Transatlantic flight, which was within her designed endurance.

The power plant of the C 1 consists of twin Hispano-Suiza engines fitted with propellers to hold the engine down to 125 b.h.p. This is done to increase reliability, and because the envelope pressure is not sufficient for speeds over 60 m.p.h. The C 5 had twin Union 120 b.h.p. engines. Each engine has an electric self-starter and the usual equipment.

The tanks are arranged in the rear of the car under the centre of buoyancy of the envelope, so that balance is not



The U.S. Navy C-2 twin-engine dirigible, with experimental horseshoe patch suspension



THE U.S. NAVY "C" CLASS TWIN-ENGINE DIRIGIBLE: Plan, side, and end elevations to scale

affected when they become empty. The gasoline drains from these tanks to a pair of pressure tanks under the floor of the car. Each pressure tank contains fuel for an hour's run under air pressure from an engine-driven air pump. Gasoline under pressure feeds from the pressure tank direct to the engines. The engineer shifts over from one pressure tank to the other every hour. This system was adopted to keep pressure off the main tanks, which are of light metal, and to eliminate the head resistance of an overhead gravity tank. It works well.

The car is protected from bumps against the ground by two pneumatic cylinders of rubberised fabric, which fit in cradles under the floor. Parachutes for the crew are carried in aluminium buckets let into the bottom of the car so as to be out of the wind. To save resistance, the drag rope which is to be let down to the landing party is coiled up in the bow compartment. The bottom of this compartment opens down like the lower jaw of a fish, and permits the coil of rope to fall out. The pilot has only to step on a pedal to throw down his drag rope.

The controls are separated. The direction pilot sits in the front seat and steers the ship by compass, having nothing else to do, while the altitude pilot sits in the rear seat and controls the course in a vertical plane. He has the elevator controls to look after, and, in addition, all valves, ballast and pressure-regulating devices on the envelope. His duty is the more exacting, and requires experience. He controls the pressure of the gas in the envelope by letting air into the ballonets. For this purpose scoops can be let down into the slipstream of either engine, and there are valves to permit discharge of air into either the forward or after ballonet or to both. The mechanic in the next compartment handles the engines on the signal and looks after the fuel supply.

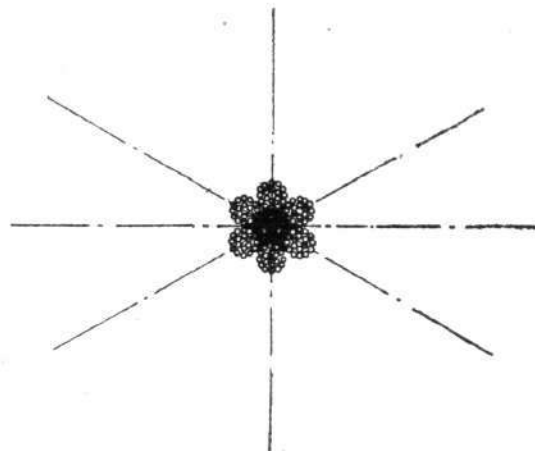
The operation of the ship is, therefore, divided among three men, who form the minimum crew. The fourth compartment is for the radio operator. The usual radio apparatus is carried, including radio telephone and direction finder.

The C 5, in its flight from Cape May to Newfoundland via Montauk, for the first time carried its radio antennae inside the envelope. The installation was successful in every way. Even when the airship was moored close to the ground at Cape May, messages were sent for nearly 100 miles, and were received from the naval air station, Coco Solo, Panama. The C 5 on this trip also carried a hydrogen carburettor, a development of the British Admiralty. By means of this device when it would normally be desired to valve hydrogen during the course of the airship's flight in order to control

altitude, instead of valving hydrogen into the atmosphere, hydrogen gas from the envelope is burned as fuel in the engines, thereby effecting a saving of gasoline and increasing the radius of action of the airship.

Kite Balloon Progress

In discussing progress in lighter-than-air craft, I should not omit the kite balloon. While the kite balloon is not a self-propelled airship, it is a very pretty engineering job,

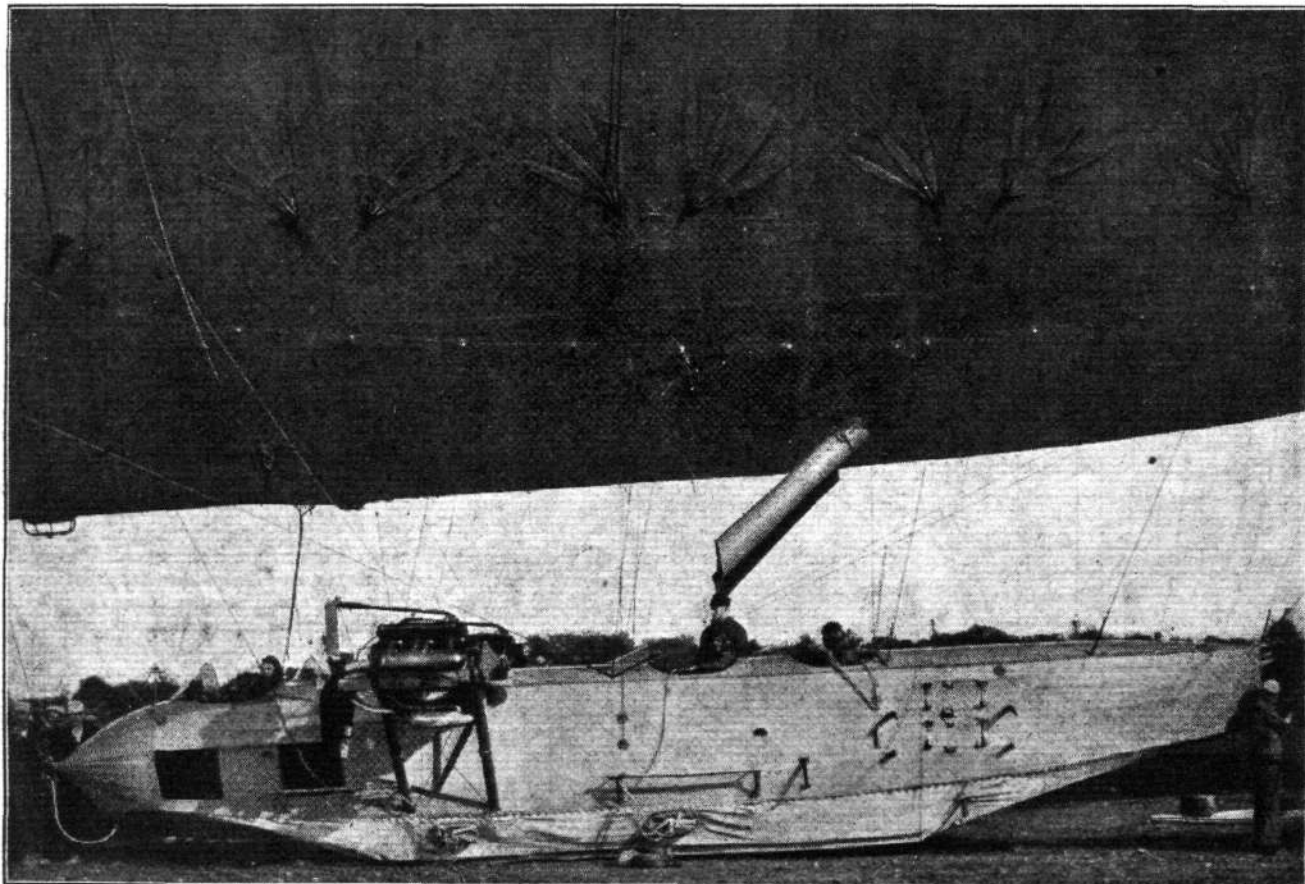


A section of a kite-balloon cable, showing internal core for telephone cable

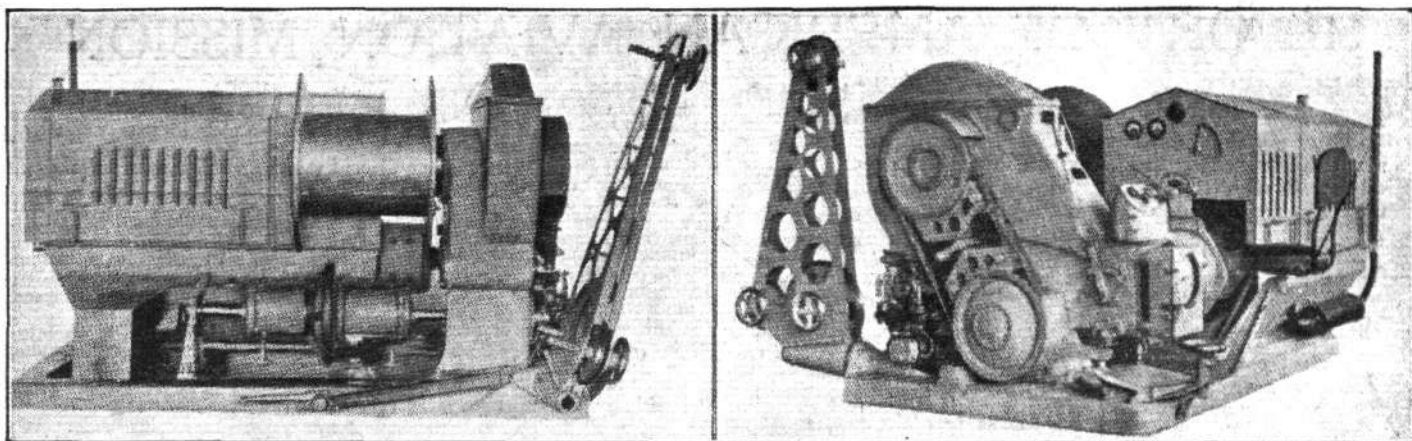
and has caused us first and last a lot of trouble. The kite balloon as a design we took bodily from the British, and our troubles came in reproducing it with our materials and in attempts to improve some admittedly weak points. The work done in that connection is not, however, different in kind from what I have already gone into.

The telephone-cored cable is a typical feature. The great advantage of the kite balloon, and in fact its only reason to exist, is the facility and certainty of communication by telephone to the ground. Other aircraft use radio, and are subject to all sorts of interference and uncertainty.

In the early days of the War telephone communication from a ship's deck with kite balloons was held by means of a twisted pair of conductors independent of the holding cable, let down on a reel from the basket. Subsequently,



A close-up view of the car of the C-type twin-engine dirigible, showing finger patch suspension



A petrol engine-driven winch for kite-balloons

it developed that a cable with a core of telephone wires was greatly desired to replace the outfit of cable and separate conductors, and that such a telephone-core cable was being used successfully by the British and French. The British cable consisted of three single conductors each enamelled, silk-covered, twisted, and then covered with a thin insulation of rubber around which was spirally wrapped a brass strip to serve as protection between the delicate core and the strands of the cable proper. Equipment for producing the thin supplementary rubber insulation required by the British cable was hard to find in this country. Consequently, a cable was developed by the American Steel and Wire Co., with a telephone core of three copper conductors, each enamelled, silk-covered, twisted and covered with a single layer of cotton, and finally insulated with high-grade rubber of thickness equal to the combined thickness of the supplementary rubber insulation and the brass strip of the British cable. This cable has proved satisfactory without the brass armour on the core, and from the results of service is believed to be as rugged as the foreign cable.

In the fall of 1917 steps were taken to develop suitable winches for handling kite balloons—a steam winch for use on small towing vessels, a gasoline-engine-driven winch for use on shore stations, and later an electric winch for use on capital ships of the fleet. The principle of the single drum cargo winch with slipping frictions was tried, and was found unsuccessful on account of the compression strain on the cable due to the superimposed layers on the drum crushing the telephone wire core. We next tried a "surge drum" winch equipped with one or more winding of "surge" drums on which the cable is laid in grooves in a single layer, and a storage drum, independent of the winding drum. The winding drums exert all the pull on the cable which is stored on the storage drum under light tension. By this method the cable on the storage drum is not subjected to the severe crushing stress which would result from superimposed layers of cable put on under high tension. The gasoline-engine-driven winch of the N-C-L Engineering Corporation was the first one developed, and a notable improvement over former experiments was the use of the Entz magnetic trans-

mission, such as is used on the Owen magnetic automobile, for transmitting power from an eight-cylindrical Herschell-Spillman engine to the winch unit. This afforded a very wide and flexible range of speed control.

In the spring of 1918 the first of the electrically-operated winches was worked out for use on capital ships. The winding unit of these winches was identical with the gasoline-engine-driven type, and the Standard Electric Co. crane motor with appropriate controller replaced the gasoline engine and magnetic transmission.

A successful steam engine-driven winch was completed about the time of the Armistice. The usual slow-speed steam winch engine had to be discarded as not giving the necessary flexibility in control of the winch nor the speed desired in quick hauling down, and a small radial-cylinder sleeve-valve high-speed steam engine was successfully worked out by the N-C-L Engineering Corp., which solves the difficulties of a proper steam power plant. With the completion of this steam unit the Department has now reached a point where satisfactory kite balloon handling winches are furnished, using a standard winding unit with any one of three different power plants (gasoline, electricity or steam) for use on various type of vessels and on shore stations.

Lightning has always been one of the chief enemies of kite balloons, and at the beginning of the spring, 1918, a large-size strain insulator was regularly interposed between the bridle of the kite balloon and the top of the towing cable. This, of course, added a good deal to the weight of the kite balloon, but was believed to be a sure protection against destruction of the balloon by lightning. Balloons so equipped gave excellent service until August, 1918, when the U.S.S. *Gloucester*, towing a large 35,000 cu. ft. type R Caquot kite balloon at 500 ft. altitude, anchored off the Section Base opposite Naval Air Station, Rockaway, L.I., during a heavy storm. Lightning struck the balloon, completely destroyed it, and, coming down through the bridle cables, exploded the strain insulator, and a theory which had held true many months through good luck.

(To be concluded.)

Italian Airship to Cross Atlantic

ARRANGEMENTS are now being completed for the trip across the Atlantic from Rome to Rio de Janeiro of the Italian airship P 34, which is nearing completion in the sheds at Ciampino.

This ship, designed by Signor Uselli, is of the semi-rigid type, 144 m. long, 28 high, and 22 in diameter, with a cubic capacity of 34,000 cub. m. It is said to be able to carry 100 passengers.

Italy's Present to Sweden

Two Italian seaplanes, presumably of the Savoie type, have been presented to the Swedish Government by the Italian fliers who have been paying a visit to Stockholm.

Poulet's Progress

LAST week Etienne Poulet, on his Caudron, succeeded in covering one or two more stages on his journey from Paris to Australia. On the 5th inst. he made the journey from Constantinople to Konia, and on the 6th he was reported at Baghdad. The following day he reached Bushire, on the Persian Gulf, after a trip across the desert. On November 8,

he was at Bundar Abbas, and left at 5 a.m. the next day for Karachi.

A Michelin Prize for Helicopters

M. MICHELIN has written to the Aero Club of France placing a sum of 500,000 francs at the disposition of the aviator who first succeeds in rising vertically from the ground, attaining a horizontal speed of 200 kilometres an hour, and landing vertically in a radius of 5 metres.

French Aeroplanes for Spain

LAST week three Breguet (300 h.p. Renault) bombing machines were delivered, by way of the air, at Madrid. The machines, which are destined for active service in Morocco, were piloted from Paris to Madrid by de Romanet, Walbaum and Massot.

Air Services in Poland

A COMPANY, in which Prince Stanislas Lubomirski is interested, is being formed at Warsaw with the object of organising aerial services between Warsaw and the principal centres in Poland. A start has been made with a service between Dantzic and Warsaw, and others will follow as soon as arrangements can be completed.

REPORT OF AMERICAN AVIATION MISSION

The report, dated July 19 last, of the Mission sent to France, Italy and England by the U.S. Secretary of War, has now been issued as a White Paper.

We publish below the material portions of the report, which is addressed to the U.S. Secretary of War, Mr. Newton, who, as will be seen, has written a memorandum to it.

A thorough study and investigation was made by your Mission of all forms of organisation, production and development. As a result of these studies, your Mission desires to emphasise the universal opinion of its members that immediate action is necessary to safeguard the air interests of the United States, to preserve for the Government some benefit of the great aviation expenditures made during the period of the War, and to prevent a vitally necessary industry from entirely disappearing. Ninety per cent. of the industry created during the War has been liquidated. Unless some definite policy is adopted by the Government, it is inevitable that the remaining 10 per cent. will also disappear.

In placing this matter before you, the subject falls into three important heads: (1) General organisation; (2) development, commercial; (3) development, technical.

The findings of the American Aviation Mission and its recommendations are submitted after a careful review of the situation in the allied countries mentioned, but always keeping in mind the situation in the United States. Under the above sub-heads the results of these investigations are presented to you, which, in the opinion of the Mission, demand the most earnest and immediate consideration along the broadest lines, with a view to establishing some fixed policy which will save the aircraft situation in the United States and give the United States an equal place with the great powers of Europe in this great new commercial development.

The American Aviation Mission therefore recommends: The concentration of the air activities of the United States, military, naval and civilian, within the direction of a single government agency created for the purpose, co-equal in importance with the Departments of War, Navy and of Commerce, to be called in this report, for purposes of identification, the National Air Service.

In making the above recommendations, the following views and data of the Mission are presented:—

Visits were made by the Mission to England, France, Italy, and conferences have been held with those largely responsible for the successful prosecution of the War, and especially with those men most experienced in the aerial development within these countries. (The committee then give a list of persons interviewed.)

In all countries visited, and in the minds of all persons met in conference, appears an extraordinary similarity in condition and in conclusions drawn from the experiences of the five difficult years of mistake and achievement in the prosecution of the War. Perhaps no stronger or more simple presentation of the regard in which the future of aviation is held in Allied countries can be given than by quotation from two letters of M. Clemenceau, copies of which were obtained in France. The first is addressed to the President of the United States, urging upon him the immediate consideration of matters aeronautical and in connection with the Peace Conference. The second is addressed to the President of the Republic of France, submitting the draft of a decree creating a separate department of Aeronautics placed temporarily under the Ministry of War—an intermediate step possible without legislation and looking to the early creation of an independent Ministry of the Air:

"Copy.

"February 16, 1919.

"Mr. President:

"I have the honour to acknowledge the receipt of your answer of February 7, to my letter of January 24. I enclose herewith, copies of the letters which I have received from Lord Milner and from Monsieur Orlando, as well as my replies.

"I am pleased to note that you agree in principle with my proposition to create an Aviation Committee for after the War. I take the liberty of insisting on the necessity of creating this Committee without delay, in order to be able to utilise it as an advisory organ for the Peace Conference. Indeed, the clauses for aerial protection seem to me to have at least an importance equal to the clauses for military and naval protection; and it is of the greatest interest to have a study made by competent personalities of the measures to take against the eventual constitution of a German military fleet. I cannot insist too strongly on the imperious necessity of this study, on account of the proximity of Germany to London, Brussels, Paris and Rome.

"Likewise, I adhere entirely to the British proposition which seems to me practical and effective, and I request you likewise to give it attention. In case it seems acceptable to you, I wish you would let me know if you could delegate two representatives to the next meeting of the new Inter-allied Committee, which will take place on Thursday, March, 6, at 10 o'clock, at the Directory of Aeronautics, 260, Boulevard St. Germain.

"Please accept, Mr. President, the assurance of my highest consideration, etc.

"(Signed) CLEMENCEAU."

"Copy.

"REPORT TO THE PRESIDENT OF THE FRENCH REPUBLIC.

"Paris, June 6, 1919.

"Mr. President:

"Aircraft has developed considerably during the War. It should, at this time, adapt itself to a no less important part in Peace time. But because of the many initiatives which co-operate in its new use and development, the efforts and means are dispersed in various ministerial departments.

"The future of aviation in France will only be assured by the co-ordination of all efforts and the unification of the general services. Also, it will give the advantage of better work from the personnel and credits which are actually affected to similar objects in different ministries.

"With this object in view, and according to the propositions of an inter-ministerial conference which I am able to assemble, I have the honour to submit for your signature the following decree creating an organ of general co-ordination of aviation.

"This should not be confused with any of the particular aviations of the various ministerial departments. At its origin, it will be attached temporarily to the Ministry of War.

"I am, Sir, yours respectfully,

"GEORGES CLEMENCEAU,

"President of the Council, War Ministry."

Even before the report of this Mission can be given consideration, a step similar to that proposed by France will have been taken by Italy. Here, however, the Department of Aeronautics is being placed under the Ministry of Transportation—a make-shift arrangement frankly acknowledged transitory and immediately possible without the legislation needed to create the clearly foreseen ultimate—the Italian Ministry of Air.

England more than two years ago began the co-ordination of her aircraft activities—an effort which has resulted in placing her well in the lead in practically every phase of aerial development, and which has resulted in bringing her months ago to the establishment of a Ministry of Air, co-equal with her Ministries of War and of the Navy. That the present Ministries both for war and for air are centred in the same individual has no significance other than that of momentary expediency.

The whole trend of events touching the art of aeronautics in its broad relation to world progress, the experience in all Allied countries (including the United States) during the five years past, the frankly discussed future plans under present consideration in foreign quarters and the views everywhere encountered by us, leave your Mission impressed with these unescapable conclusions:—

1. That Italy, France and England realise fully the importance of aircraft in the military-naval and civil-commercial aspects, and propose to encourage the general development of the art through Governmental aid to commercial industry.

2. That Great Britain has come to consider the dominance of the air as at least of equal importance with that of the seas, and is frankly and avowedly planning a definite policy of Aerial development to that end.

3. That any future war will inevitably open with great aerial activity far in advance of contact either upon land or sea, and that victory cannot but incline to that belligerent able to first achieve and later maintain its supremacy in the air.

4. That for economic reasons, no nation can hope in time of peace to maintain air forces adequate to its defensive need except through the creation of a great reserve in personnel, material and producing industry through the encouragement of Civil Aeronautics. Commercial Aviation and Transportation development must be made to carry the financial load.

5. That no sudden creation of aerial equipment to meet a national emergency already at hand is possible. It has been proven within the experience of every nation engaged in the War that two years or more of high pressure effort have been needed to achieve the quantity production of aircraft, aircraft engines, and accessory equipment. The training of personnel, including engineering, production, inspection, maintenance and operating forces—covering some fifty distinct trades and some seventy-five industries, has proved in itself a stupendous task when undertaken upon the basis of the war emergency alone.

6. That the rapid adaptation of aircraft to the commercial uses of peace is everywhere being studied and planned. Under the forced draft of war, this newest and fastest agency of Transportation has been brought to a high state of development. It must now be redesigned to meet the progressive demands of a civilisation at Peace.

7. That because of its great speed and range of operation, oceans, states and even countries are being passed over with a greater facility than are townships and counties traversed by the motor car. The need for International agreements governing the construction, operation and safety of aerial apparatus of all kinds is immediately before us.

8. That for the first time in the world's history the stage is set for a close International co-operation in the development of a great art at the very threshold of its era of commercial utility. Great Britain, France, Italy and Japan not only invite but urge the United States to share in this work.

9. That just as we now have National, International and Interstate regulations, laws and agreements covering rail and steamship travel, and the safety and navigation of the seas, so must we have similar regulations governing aircraft and the uses of aerial navigation throughout the world. The International Convention drawn by the International Committee sitting in Paris, under the Peace conference, gives the first long step in this direction.

10. That the need in each country for a single authoritative point of contact for the conduct of all International aviation affairs, legal, operational, technical and political, is imperative. Such agencies have already been set up in England, France and Italy. The United States has, under the terms of the International Convention, no option but to follow these leads.

11. That in England, France and Italy sentiment is undoubtedly in favour of the centralisation of aircraft development under one authoritative head. Difference of opinion has been encountered only in the matter of Army and Navy personnel and in the question of the independent fighting force.

England holds the initiative and is building her R.A.F. co-equal with the Army and Navy. France and Italy follow England's lead, but seem inclined to leave questions of operating personnel for the present to War and Navy Departments, and to debate the need of an Independent Fighting Air Service. In all cases, forces operating in conjunction with Military and Naval units, function under the Military or Naval High Commands.

12. That among the many considerations of early moment requiring governmental direction may be mentioned the following:—

- (a) Federal and International laws governing the use of air routes.
- (b) Federal and International control of pilots' licences; examination and tests required.
- (c) Federal inspection of all commercial aircraft for airworthiness, or suitability for service.
- (d) Customs and other regulations for crossing State and National boundaries.
- (e) International standards for methods of communication and signalling.
- (f) International standards covering the marking or charting of air routes and of landing places for both day and night use.
- (g) International specifications and rules governing the construction, equipment and operation of standard aerodromes, landing stations, signal towers and other aids to aerial navigation.
- (h) Port regulations and fees covering seaplanes.
- (i) Federation taxation of aircraft and licence for its use.
- (j) Safety measures and devices; legislation forcing adoption.
- (k) Fire underwriter standards, regulations and safeguards; insurance of machines, of material and of persons in transit (property and life).
- (l) The legal status of privately-owned aircraft; the property rights of the air; liability for damage inflicted and incurred.
- (m) International standards and specifications covering accepted practice in quality of materials, in factor of safety, and in methods of construction; an engineering literature of this new art must be created by International approval.
- (n) Maps and navigation charts of the United States and its territories.

13. That we of to-day are conceivably no more qualified to judge as to the scale and development of the aircraft of ten years hence than were we of even five years ago able to foretell the achievements of to-day. We must bear in mind always that for every one mind focussed upon things aero-

nautical in this earlier period, some thousands of keen minds are now versed in the aircraft art. With proper governmental encouragement, rapid progress seems inevitable.

14. That the broadest consideration for the ultimate welfare of American aviation must be given in the constitution of any organisation set up for the co-ordination and control of aeronautics within the United States. The prerogatives and ambitions of governmental departments and of individuals must be assayed at true value.

15. That past experience and every economic consideration point to the vital need for the formulation by the United States of a definite, comprehensive and continuing policy for the development of every phase of the aircraft art. Our Government is now faced with the task of nursing and actively encouraging a new transportation industry, whose healthy growth is vital to the future progress and defence of the nation.

Because of the lack of a definite, intelligent and sympathetic policy in our governmental aircraft organisation since the armistice, our American aeronautical industry, built up at such great expense of money and of effort, is rapidly disappearing. No sensible business man is justified in keeping money invested in the aircraft industry under the conditions which have maintained in the United States since November 11.

16. That the closest possible relations must continually exist between the aircraft agency of the Government and the production and commercial industry engaged in aircraft development.

17. That the industries involved in the production and commercial use of aircraft must be given recognition and representation in connection with all national and international activities bearing upon the direction and control of aeronautics.

In the foregoing brief presentation of its conclusions, your Mission has touched upon the aeronautical policies already in effect or under present discussion in England, France and Italy. Great Britain's plan of organisation certainly warrants our most careful consideration. Its salient points are clearly set forth in the chart herewith attached. It is not argued that the British method is perfect, but it can be stated without fear of contradiction in any quarter, that it stands to-day the most comprehensive governmental mechanism yet set up by any nation in the world for the encouragement, upbuilding, direction and control of its Air resources. This organisation has been born of five bitter years of trial, mistake, experience and progress. It is the product of the best brains in the British Empire focussed under the spur of national need and the demand of the British people. We in America may well study it carefully.

Your Mission, in presenting its recommendations, desires to emphasise the view everywhere encountered that the future of aerial navigation and of aerial development generally, is in only a limited sense a function of military and naval establishments. The air is a medium for commerce and communication and its direction to the peaceful uses of civilisation must be unhampered by the necessarily restricted views of these specialised departments.

Recommendations.

A. The concentration of the Air activities of the United States, civilian, naval and military, within the direction of a single governmental agency, created for the purpose co-equal in importance and in representation with the Departments of the War, Navy, and of Commerce.

B. That the agency thus created be charged with full responsibility for placing and maintaining our country in the front rank among nations, in the development and utilisation of aircraft for the national security, and in the advancement of the civil aerial transportation and communication arts.

C. That this governmental organisation be formed in general as follows:—

1st.—A Civilian Secretary for Air.

2nd.—An Assistant Secretary, a civilian, responsible directly to the Secretary for Air for the management and operation of the Department.

3rd.—Five or more Divisional Heads acting as chief of the sub-departments of (a) Civil Aeronautics; (b) Military Aeronautics; (c) Naval Aeronautics; (d) Supply and Research; (e) Finance, etc.

4th.—An Air Council, advisory in character, which shall be constituted by the Secretary of Air, including the Assistant Secretary of Air, the chiefs of the several sub-departments, and such other personnel as may be deemed advisable.

We desire especially to invite attention to the complexity and newness of the whole development of the aviation art, and to urge the broadest possible treatment of the subject during this formative period. We suggest that the lesser details of organisation may well be left to the judgment and initiative of those called to assume the responsibility of directing this work. We desire also, in this connection, to call attention to the aircraft interests of the Allied Governments, and to emphasise the necessity for careful discrimination in the selection of men of industrial experience and broad vision.

D. The establishment of governmental institutions of education and training, including an air college, all open alike, under proper restriction, to military, civilian and naval personnel.

E. Such curricula and such arrangement of promotion in the National Air Service, and such assignment and pay, as to insure to the young man an attractive career whether he elects to remain permanently in the "National Air Service" or return to Army or Navy, or to civil life.

F. The adoption of a system whereby Army, Navy and civil personnel can be circulated in proper proportion through the National Air Service. This personnel would, unless permanently assigned to air work, be automatically returned

to the military and naval sources, or to civil life as an Air Service Reserve, after the educational and service periods in the National Air Service have expired.

It is felt that such a circulating system is vital to the co-ordination and ultimate efficiency of the three services, and to the desired dissemination of a knowledge of and interest in the art among our people. The young officers of to-day will command the military and naval forces of to-morrow, and will carry with them into the highest ranks an intimate knowledge of aircraft, and of the strategy of its varied uses, in connection with operations on land or sea. The direction of civilian and commercial activities of all kinds will be made possible, and the closest contact and co-operation between the Government and the aeronautical industries assured.

All international relations touching aerial matters fall naturally within the jurisdiction of the Secretary for Air.

All responsibility for the supply of aircraft material and equipment of all kinds, and for the training of personnel for all branches of the service, is, in accordance with these recommendations of your Mission, placed with the Secretary for Air. As some 27,000 items are involved in the equipment and maintenance of each Air Squadron on active duty, the need for a single responsible direction seems undebatable.

Under this plan of organisation here recommended, all squadrons and all equipment assigned by the National Air Service to meet the stated requirement of the military and naval establishments pass automatically under Army or Navy command. Under National Air Service operational direction remain only those independent projects unrelated to the activities of the military and naval fighting fronts and such personnel and equipment as forms a surplus to the needs of the sea and land fighting arms.

The question of governmental organisation for the development and utilisation of our country's air resources has been given consideration by your Mission, seemingly from every angle. The recommendations made are general. No report could be made effective if burdened with the mass of details involved in the setting up of any governmental mechanism such as proposed.

There have been, and will continue to be, advanced many objections to the establishment of a Department of the Air. We believe none of them will prove insurmountable. We believe the advantage gained to be such as to entirely overshadow any temporary difficulties.

Always in the past, in war by land or by sea, and in the transportation activities of peace, we have thought in two dimensions only. We must now readjust our minds to think for all future time in three.

When this Mission left the United States in May, its members were hoping the Atlantic Ocean might be crossed before January 1, 1920. Within the two months of our absence four successful crossings have been made, and without the loss of a single life.

There must be no over-optimism. There are years of development and experimentation ahead. As in the case of all the other great agencies of civilisation, the commercial and financially profitable use will come slowly. But here the immediate welfare and safety of our nation is involved, and an intelligent and efficient direction of our aeronautical affairs will be demanded by the American people. American genius has given to the world the aeroplane, a new instrument of commerce and of war. But America has left its development to other nations, and, too late, realised the mistake of this neglect. She has paid the price. America now again has the opportunity if not to lead, at least to take her place in the front rank and to gain to herself the full benefit which will surely accrue from an active and sincere co-operation in the engineering activities and in the scientific and commercial aircraft developments of those nations associated with us in the war.

But this will be impossible, in the future as in the past, if our aircraft activities remain dispersed among the several governmental departments, and impossible of co-ordination for decisive action.

Upon the breadth of view and the vision of those in control of America's policies depends our future as an Air Power.

Commercial Development.

With reference to the commercial development of aviation, your Mission makes its recommendation based upon the following conclusions, which have been formed, first, through knowledge of conditions existing at present in America, and, second, the knowledge gained by its investigations abroad.

The investigations in England included visits to a number of factories, aerodromes and other points of particular interest, and interviews with the following gentlemen. (The Mission gave a list of the works visited and the officials interviewed in England, France and Italy.)

1. One of the most important problems to be considered in the rehabilitation of the world's commerce, following the close of the war, is the development of aerial transportation for commercial purposes. Its one invaluable service, and that in which it surpasses all other means of transportation, is speed, that time-saving element which the world has always striven for, and for which America, with its great distances, has such serious need. Reliability, safety, economy and those other qualities of transportation service which are of value, will steadily improve as the use of aircraft increases and experience accumulates.

2. It is as impossible to forecast the future of this new medium of transportation as it would have been to describe the speed, comfort and safety of the modern steamship at the time the first steamship crossed the Atlantic. It is safe to say, however, that in time it will become one of the great transportation mediums of the world and will continue to offer the fastest and most direct means of transportation for persons, mail and light freight, known to civilisation. Its development is limited only by the perfection of the mechanical devices used, with which we are constantly becoming more familiar, and by the extent of our knowledge of the atmosphere which is becoming more thoroughly understood each year.

3. It is equally difficult to determine the speed with which this development will take place. In fact, this will be determined largely by the opportunities afforded to employ the brains of the engineer and the scientist on the problems involved, which in turn will be controlled by the financial resources available for such work. It is thought by some well-informed authorities that the next five or ten years will see this new industry through its initial stages, and established on a self-supporting basis, providing it is encouraged at this time. Adequate support cannot be expected from private enterprise alone and if no outside aid is given, ten years will probably see this industry in America still struggling for a foothold, and far behind its European competitors who will receive substantial aid of many kind.

4. History has shown repeatedly that no nation can afford to neglect the highest possible development of its transportation mediums regardless of the opportunities existing for immediate profit to the private enterprise concerned. This is particularly true of aerial transportation, which is not local in its nature, but which is essentially of a national and international character, due to the great distances covered, and to the speed with which it links together far distant points. This principle has been so clearly understood that an international agreement has been established between the Allies and their associates, by which international flight of aircraft has been provided for in a far-sighted manner, thus making immediately possible the flight of private craft from one country to another on a basis as clearly defined by law

as that governing the movement of steamships, except, of course, that the practice of ages of ship travel is missing in the case of aircraft.

5. The development of aviation is progressing so rapidly at this time that it is difficult even for those in close touch with it to keep up with its progress. During the past two months the Atlantic has been crossed four times by aircraft; first, by a seaplane of the American Navy; second, by an airplane of Great Britain, and finally, by an airship of Great Britain which has twice demonstrated its ability to fly between England and America. All of this has been accomplished without the loss of a single life. Airships are now building in England which will be able to carry from five to ten tons of mail, in addition to the necessary fuel and crew, and cross the Atlantic from London to New York, in one half the time made by the fastest steamships. Who can say such transportation facilities will not greatly serve civilisation, and be of immeasurable value to our own country if properly developed and used?

6. Already lines of aerial transportation are being used in England and France in a small way for commercial purposes, but the distances in these countries are so short that relatively little advantage can be gained, so such ventures will develop slowly. A daily service from London to Paris has been in operation for some time, and promises to be quite serviceable as soon as it can be relieved of its war-time military supervision. Other lines now in operation are from Paris to Lille and Brussels, and from Paris to various points in Alsace-Lorraine and German occupied territory. Among other plans English private interests are projecting airplane lines from Cairo to the Cape and Cairo to Bombay, and French interests are planning to run a line to Algeria and Morocco. These lines will carry mail, passengers and express, and it is expected that they will materially shorten the time between European centres and their far distant terminals. The United States-Post Office Department has carried mail by airplane from New York to Washington for over a year with a record of nearly 100 per cent. delivery at each end every day. It is now inaugurating a line from New York to Chicago which will shorten the mail time between these two points to about one half. It is also projecting a two-day service from New York to San Francisco. England is already desirous of organising with the United States a trans-Atlantic airship line for mail service which would give a five-day mail service from London to San Francisco. Such a service is entirely possible at this time, and its inauguration depends only upon adequate encouragement and financial support.

7. The risks involved in these ventures, due to unknown conditions of the atmosphere, imperfections of equipment, etc., are still so great as to make them impracticable from the point of view of private enterprise, undertaken for a profit. It left entirely to such private enterprise, aerial transportation will develop slowly and with many losses and backward steps, as did the steamship, the railroad, and the automobile, each of which, however, has ultimately become a vital factor in our civilisation.

8. One of the striking features of our investigation in Europe was the unanimous belief that the use of aircraft in warfare and for national defence would continue to increase and that in the next war, whenever it might come, aircraft would be a far more vital factor even than it has been in this War. One of the greatest military authorities in Europe stated that in his opinion the first battle of the next great war would be in the air, and would very nearly decide which side would win, in that the side winning in the air would immediately have access to all of its enemy's sources of supply and production, and would quickly cripple them by air raids upon an enormous scale. The opinion was everywhere expressed that the development of aircraft for purposes of national defence must continue, and that sufficient flying and production facilities and personnel must be maintained at all times to ensure an adequate supply in case of need. Due to the complicated and delicate nature of such equipment, to its rapid depreciation in use, and to its constant obsolescence, the expense involved in such a programme would be very great, in fact, almost prohibitive in peace times.

9. The existence of an aerial transportation industry with a great commercial air fleet and of a strong production industry would greatly decrease the need for strictly military equipment and resources, in that practically all of the aircraft and landing field facilities and personnel, and the manufacturing and maintenance facilities and personnel employed by such commercial activities, would be available as a reserve in time of war. It is evident, therefore, that the most economical way to develop a strong air service for national defence is to encourage, by every means possible, the use of aircraft for commercial purposes, and thereby build up a commercial fleet at relatively small expense to the Government, which would effectively supplement its strictly military equipment in time of need. America's experience during the war has proven conclusively that aircraft facilities and personnel, and particularly production facilities and technical personnel, cannot be obtained upon short notice, but only by long and continued experience and at great expense.

10. America's production industry reached large proportions during the War, but since the signing of the Armistice it has shrunk to a very small volume. Unless immediate attention is given to its conservation it will practically disappear, and a considerable portion of the great sums expended in its development will have been spent fruitlessly. This industry does not require a large volume of business to keep it alive and healthy, but it does require a steady and dependable demand, otherwise private capital and enterprise will not long remain interested.

Recommendations.

Upon the basis of these conclusions, we offer the following plan for stimulating the development of commercial aviation as an aid to national defence, and as a response to the demand that is already developing for improved commercial transportation through the use of aircraft.

A. The Civil Aviation Division of the National Air Service should establish, with the advice of the Army and Navy and the Divisions of Military and Naval Aeronautics, a series of flying routes throughout the United States and its possessions and to contiguous foreign countries, which will be of military and commercial value. It should also prepare and publish maps and descriptions of each of these routes suitable for the use of fliers.

B. There should be provided at national expense certain flying fields in strategic locations and suitable for military purposes, and encouragement should be given to the various States and Municipalities to provide flying fields upon all flying routes at points found desirable, thus eliminating the necessity for private ownership of flying fields except for strictly private use. Hangars should be provided at each flying field by the Governmental authority owning the field (that is, Federal, State or Municipal), or, where such fields

are used constantly by private interests, they should be permitted to provide their own hangars immediately adjacent to and opening upon such flying fields.

The operation and use of such flying fields should be controlled by Federal Law, so as to obtain uniformity throughout the nation and conformity with international regulations.

C. All flying routes and flying fields should be equipped at national expense with signalling and communication systems, including wireless telegraphy, wireless telephony and searchlights, to thoroughly safeguard and guide aircraft in flight. The Government's attitude in this matter should be the same as that maintained towards shipping in its lighthouse and coast patrol service. The operation of signalling and communication equipment should be controlled by Federal law for the reasons indicated under item "B."

D. A meteorological service should be developed to provide fliers and other aviation interests with accurate weather reports and other atmospheric data necessary to govern their activities intelligently. The value of this service to commercial aviation cannot be over-estimated, as it will go far towards establishing reliability and safety of service, just as weather reports are of immeasurable value to ocean and lake transportation.

E. Training facilities should be provided at various localities throughout the country, either at Government expense or by private enterprise under Government regulation, with guarantees from the Government of a sufficient number of students to cover expenses. Such guarantees could be given by the Government without undue expense if it used such schools for the preliminary training of its military personnel. Such a plan would encourage private enterprise to provide facilities for the training of the personnel needed for commercial requirements, which personnel in turn should become a permanent reserve for military requirements in time of need. There should be established at least one school for the teaching of aerodynamics and other branches of the science of aeronautics, as recommended under the heading "Organisation." Encouragement should be offered to universities throughout the country to establish departments of aeronautical science.

F. The Government should encourage the development of new design and aeronautical technique for commercial purposes along the lines recommended under the heading "Technical Department."

G. The Department of Aeronautics should maintain the closest possible relations with all civilised nations in determining and applying the rules and regulations which will govern the international use of aircraft, and there should be developed, as rapidly as is consistent with proper consideration, a body of Federal law governing the use and airworthiness of aircraft for commercial purposes which will safeguard life and property and promote the commercial usage of aerial transportation.

In order that commercial aviation may be helped and not hindered by such legal restrictions, it is of vital importance that aerial transportation be recognised at once as an element of inter-State commerce and be made subject to one body of Federal law applying uniformly throughout all of the United States. It will thereby avoid the complications of individual State control which have proven to be such a handicap to railroad and automobile operation.

H. Insurance of aircraft and its personnel against all kinds of hazards and risks involved should be encouraged in every way. The cost of such insurance should be kept as low as is consistent with the risks involved.

I. Encouragement should be given to the organisation of private enterprises for carrying on aerial transportation. This encouragement might well be in the form of payment for the carrying of mail and expressage, and of guarantees as to the volume of such business. Compensation might be paid to such enterprises for keeping their facilities available for use in time of war.

Guarantees of this kind, coupled with opportunity to insure against loss by accident, should make privately operated transportation lines a commercial possibility, but if it is found that private enterprise does not respond to such encouragement, then the Government should undertake certain transportation ventures on its own account, and should continue to operate such lines until they are proven commercially successful. Ultimately they should be sold to private enterprises on such terms as would permit of successful operation, as it is not believed that commercial aviation will ever be successfully developed entirely under Government control.

J. The remaining aircraft production industry should be conserved and kept in a healthy condition by a well-defined and continuing programme of production for military purposes

over a period of years. This policy should be continued until the commercial demand is adequate to support an industry of sufficient proportions to form an effective nucleus upon which can be built a war-time production in case of need.

Technical Development

With reference to technical development, your Mission, in submitting its recommendations, bases the following conclusions on a knowledge of conditions existing in the United States and upon extensive investigations conducted abroad. (Again, the Mission give a list of persons interviewed and establishments visited.)

2. The form of technical organisation and control recommended by our Mission differs materially from the controlling organisations in Italy, France or England. Inasmuch as, for some time at least, military, naval and departmental flying seems likely to lead in the development of the art, your Mission desire to lay emphasis upon the necessity of having these departments strongly represented in the operations of the Technical Division so that they shall be materially helped and not hindered in their research, experiment and development. To the same end, we are of the opinion that lighter-than-air, which in England and France, due to the closeness of the War, the Technical Division is at present dominated by military personnel, but the opinion is unanimous that, as times goes on, civil personnel will supersede military in this Division. General Ellington, England, expressed this opinion flatly, and General Brooke-Popham, Director of Research, England, holds the same belief. In the Royal Aircraft Factory, at Farnborough, civilian requirements are already overtaking military and naval. It has therefore been deemed wise to take the ultimate step at the outset in America, and a civilian head, of the type now earnestly sought in France and England, is recommended for America.

3. In equipment and personnel, England and France and Italy are maintaining their War strength in the Technical Division. At Farnborough, we found a complete experimental plant, employing about 3,000 men and women, and carrying on actively nearly every line of research, experiment and development in motors, planes and accessories. More than a score of planes, rigged with apparatus for aero-dynamic experiment, were in the hangars and in the field. Physical and chemical laboratories seemed busy and fully-manned. Estimating the lighter-than-air and the naval experimental and research personnel, it seems probable that the plant and the personnel engaged in the division in England is nearly, if not quite, equal to the entire trade in America at the present time. Obviously, this branch of aeronautics lies at the very foundation of the future, both military and civil, and to fail to bring it up to the standard of the world cannot help but mean dependence and mediocrity, or worse, in aeronautics in America.

4. The inclusion of such topics as armament (Ordnance), wireless (Signal Corps), instruments (Admiralty), photography (Signal Corps), design and bombs, (Ordnance), etc., has been found necessary in all countries. In reality, the design and supply of such appurtenances is left to the departments or bureaux specialising in them, but research and experiment and development in methods of installation and use is essentially a function of the Air Service Technical Division, and must be carried on by this Division, both in the laboratory, on the factory floor and especially in the air, in the tank and on the field.

5. In all the European countries visited we found that access to and use of the Government-owned facilities for development is established. The basis of such use varies, and can be adapted to the circumstances. In all countries, however, the principle is the same, namely, that private interests must obtain access to Government facilities through the officers of the Division, so that new inventions, etc., shall pass the scrutiny and criticism of the Division heads before going into actual experimentation. In England an attempt has been made to furnish facilities at cost, but to save overhead a schedule of flat prices is being worked out.

6. In England and France the question whether or not to design complete motors and machines no longer exists. France was forced to design aeroplanes in 1916, due to the failure of her private firms to meet the crisis created by the Fokker; but the immediate result appears to have been a quick return to the safer measures for encouraging the private designers to design and build, under the direction and assistance of the State. In England, the complete design of aeroplanes ceased with the S.E. 5; and both Government officials and industrial officials offered ample testimony that the making of complete designs was a mistake and would not be repeated, due to its effect upon the private design departments. Without exception, the manufacturers appear to take the view that it would be idle to compete by private efforts, if one division of the Government was designing and another division buying, as the Government would inevitably favour its own designers, even though not quite so good. The result of such a policy, therefore, would be to limit the number of sources from which useful designs can be obtained, and also to lower the standard of personnel in the design departments of private firms.

7. In 1918 Sir Arthur Duckham, then Director of Aircraft Supply for England, said:—

"As we all know, changes in design, unless they are actually for new types, may be absolutely against production; most of our delays in production in this country, and in the countries other than ours, have been due to the effort to obtain too great perfection at too early a time."

Having this in mind, and having in mind also the disastrous effects upon production of similar causes in the United States your Mission asked explicit questions concerning the plan used by the Technical Division in England to minimise the result of such changes. The method is outlined as follows:—

"All changes made necessary by the fact that a machine or motor is dangerous to the flier or to the public are classed as Number I. These are imperative, and are ordered by the Director of Design, without delay. No machine is allowed to be accepted or flown without such changes having been made."

"Important changes involving improvement in performance, etc., are classed as Number II. Such changes are made by order of the Modification Board described below, and became effective only at such time as not to interfere unduly with production."

"Improvements and additions, not vital but often valuable, are classed as Number III. They are made when convenient, both to Government and to contractor, and are not allowed to interfere with production or greatly increase price."

A Modification Board shall pass on changes and classify them. This board consists of five members, one from the Technical Division, one from Production, one from Operations, one from Finance, and one from Supply. In the case of Number I changes, the Director merely reports that such and such changes have been ordered. All other changes are ordered by the Modification Board at regular meetings.

Your Mission is of the opinion that the establishment of some such uniform practice, covering not only such changes but also the method of paying for them, is essential to production, and should be a responsibility of the Technical Division.

Recommendations.

(a) That all technical functions of the Government in respect to aeronautics be centralised in a single Technical Division which shall perform the work for the Army, Navy and Civil aviation; and which shall be headed by, preferably, a civilian of wide executive experience. Such a division should include as assistants to the director, experienced representatives of Army, Navy and other Government departments interested in aviation, who shall be nominated by the departments, and shall act as advisors upon the special needs of the Service they represent.

(b) That steps be taken forthwith to secure for the United States the most advanced equipment for research, experimental and development work, and for the testing of motors, planes, balloons, etc., for the testing of materials; for the examination and testing of aeronautical appliances, including armament and instruments; and that such an organisation shall be established as shall assure at all times that the research, experimental and development activities of the Government shall be second to none.

(c) That the research, experimental and development facilities and equipment now used in aviation by the Army, Navy and other Government departments be inventoried immediately and put, as far as practicable, under the control of the Technical Division, retaining such of same as may seem suitable and bringing them under a central control to make a complete and efficient equipment, and discarding such of them as unnecessarily duplicate others or are out of date. In making this change, great care should be exercised to guard against measures which might tend to interfere with suggestions for improvements and advances in aviation, material and methods, coming from the operating aviation branches of the Army, Navy and Postal Departments. Experience has proved that the initiative in the advance of motors, planes and accessories often comes from practical experience in the flying field rather than from the scientific department of aeronautics. The Technical Division will, in co-operation with the operating forces, study, work out and apply all such suggestions. Care should be taken also to avoid duplicating facilities already in existence, such as water tanks, armament testing grounds, and many other items operated by existing departments. Arrangements should be made whereby the existing plants of this sort can be used, on a proper payment basis, by the Technical Division.

(d) That extreme care be taken in such a process of adjustment to provide ample means whereby the special technical needs of the: (a) Army; (b) Navy and (c) Civilian flying shall receive attention. Moors should also be provided whereby military and naval experiments of a secret nature can be carried forward.

(e) That the organisation of the Technical Division cover by means of adequate personnel and equipment, all branches of aeronautical research, experiment and development, including the application and aerial use of instruments, armaments and munitions, wireless telephone and telegraph, bombs and fittings, sights, fire-fighting apparatus, parachutes, air bags and other safety devices, motor appliances for air service, propellers and photography.

(f) That all the technical facilities of the Technical Division for aviation, whether now existent or to be created, shall be available to private inventors and designers, upon proper and reasonable terms.

(g) That in view of the experience of England and France, it is dangerous to allow the Technical Division to operate under normal war conditions a department of complete design in heavier-than-air machines or in motors, as such competition results immediately in stopping private departments of design. The Technical Division, therefore, should be a critic of, and supplementary to, private design rather than aim at design on its own account. The policy of the Technical Division should be to maintain and encourage a considerable number of well-manned and well-equipped private design plants and to co-operate with these plants in all undertakings that meet with the approval of the Technical Division, and to place orders with these plants, at fair prices, for design and for experimental construction of motors, planes and appliances. Competition of the Government with the industry should be avoided, the only allowable exception being cases where, either on account of expense or for other cause, the Technical Division cannot obtain needed material or design from existing sources.

(h) That careful thought shall be given to the establishment of competition in motor, plane, balloons and accessory design, and encouragement be offered in every reasonable

way to the promotion of competitive events and the establishment of standard records.

(i) That the Technical Division shall publish regularly and under competent management all the technical facts and data developed by the Division that may be helpful to the industry, reserving at the same time to itself the right to preserve secrecy in all matters that are deemed to be in the nature of Naval or Military secrets.

(j) That such a Technical Division shall maintain at all times as close touch as possible with the development abroad, and shall maintain representatives in Europe charged with the duty of liaison between the American and European technical organisations.

(k) That a definite method of payment for independent design, experimental production, changes in design, alterations and adjustments be worked out by the Government as quickly as possible, to the end that the design and improvement of motors, planes, balloons and appliances may be stimulated and not stifled.

(l) That the Technical Division shall include an Inspection and Testing Department, which shall carry on all inspections and tests of experimental construction and revision, and which shall issue certificates of air-worthiness for all machines for private and commercial use, and shall from time to time inspect all machines and appliances, including landing fields, signals, etc., used by public. In co-operation with the Civilian Division, this department shall have power to limit and control all types of air machines used in commerce, and to test such machines before they become production models. This department should have power to examine the inspection methods of all private concerns building aircraft, and to pass upon the quality of such methods from time to time.

(m) That close co-operation be maintained at all times with the purely technical aeronautical bodies, and also with the industrial bodies engaged in aeronautics, so that standardisation of materials and practices may be carried forward as rapidly as can be done without hindering the development of the art or entailing undue losses upon the trade.

The report is signed by Messrs. Benedict Crowell, The Assistant Secretary of War; Howard C. Coffin, Member of Council of National Defence, Capt. Henry C. Mustin*, U.S. Navy; Col. Halsey Dunwoody, Air Service, U.S.A., Assistant Chief, Air Service, A.E.F.; Lieut.-Col. James A. Blair, Jr., General Staff, U.S.A.; George H. Houston, Pres., Wright-Martin Aeroplane Corporation; Charles M. Keys, Pres., Curtis Aeroplane and Motor Corporation; and S. S. Bradley, Manager, Manufacturers' Aircraft Association.

Capt. Mustin makes the following reservations:—

Memorandum No. 1.

1. I concur with the report of the Organisation Committee of the American Aviation Mission, to which I have affixed my signature, with the following reservations:—

(a) Provided that the personnel employed in Naval Aviation operations shall be composed exclusively of officers and enlisted men of the Navy, Marine Corps, Naval Aviation Reserve, and where required for shore establishments, of civilians under the employ of the Navy.

(b) Provided that all advanced training of Naval Aviation personnel excepting advanced aviation engineering courses, shall be under the direct control and supervision of the Navy.

(c) Provided that when officers and enlisted men of the Navy, Marine Corps or Naval Aviation Reserve are detailed for duty with the proposed Air Department, they shall retain their Naval or Marine Corps ranks and ratings.

(d) Provided that administration and operation of all Naval Aviation forces shall be under the direct control of the Navy.

(e) It is recommended that the question of including in the proposed Air Department an offensive Air Force independent of the Army and Navy be left open, pending further investigation of this subject; and that the subject be investigated without delay by the Mission in conference with Army and Navy Representatives, who have made a special study of military and naval strategy.

Memorandum No. 2.

1. I concur with the report of the Development Committee, to which I have affixed my signature, with the following reservation:—

(f) Provided that nothing in the organisation of the proposed Air Department shall restrict the Navy in the following activities:

(a) Maintenance of an organisation adequate for the preparation of general specifications, general plans and characteristics of the aviation mechanisms, accessories and equipment required for Naval purposes.

(b) Maintenance of an organisation and facilities adequate for carrying on experimental aviation work of a class that is exclusively of a Naval character, and that does not involve duplication of efforts and facilities in the proposed Air Department that are common to other aviation branches.

(c) Maintenance of an organisation and facilities for conducting the acceptance and tactical tests of complete aviation mechanisms and accessories.

MEMORANDUM BY U.S. SECRETARY OF WAR.

August 11, 1919.

In making public the report submitted to me by Mr. Crowell and his associates on the American Aviation Mission, I desire to emphasise the thoroughness and value of the studies made in England, France and Italy with regard to the importance of aircraft and the essential dependence of the art for its development upon a sympathetic attitude in the Government. Those best informed throughout the world are in accord in believing that this new agency of transportation has possibilities upon which it is now quite impossible to set limits. They are further agreed that we face a period, more or less brief, in which the prospect of commercial return is not sufficiently sure to justify private enterprise in developing the aeroplane industry into a self-sustaining position.

The importance of aircraft as a military arm is obviously so great that we must leave nothing undone both to develop the art in its scientific and practical aspects and to provide facilities for rapid quantity production in the event of emergency.

From these considerations it is clear that the ingenuity and ability of American engineers and inventors must be co-ordinated and our national effort freed from wastefulness and duplication.

The mission has, in my judgment, gone too far in suggesting a single centralised air service. Army and Navy aviators are specialists in the art; both the airplanes and the pilots needed are of a different type from those needed in civil undertakings. The pilots particularly need to be trained upon a different theory. Military pilots are trained to fight singly or in formation and to operate in co-ordination with other branches of the military service, so that their training must be military. Their own efficiency and that of the other branches of the service depends upon the most intense and constant associated training, and a separation of the Air Service from the Army or the Navy would require co-ordination of their activities in time of War, whereas effectiveness in military operation rests upon the concentration and singleness of authority, command and purpose.

The point emphasised by the mission is the importance of maintaining adequate production facilities in this country. This, it is believed, can be brought about best by the establishment of a Government agency which will lay down the necessary rules, national and international, for aircraft operation, prevent discouraging lack of uniformity in State regulation and generally stimulate private and public enterprise in perfecting and using commercially this mode of transportation, and by centralising the placing of orders on Government account so as to have the incidental effect of making them contribute to the maintenance of aircraft production as an industry. It is not proposed, as I understand it, that great appropriations of public funds should be made for the establishment of uneconomic commercial air service routes, but obviously an extension of our air mail service could be made and it could be further extended as the perfection of machines advances and their reliability of service is more and more established. Such encouragement as the Government may find it wise to give can be accomplished without sacrificing the science of military aeronautics. The Joint Board of the Army and Navy is already eliminating duplication and producing co-operation in developing the air service of those departments, and should Congress decide to extend its aid to the commercial development of aircraft, complete co-operation will be easy in all matters of invention, design and production where the different aspects of the problem meet on a common ground.

NEWTON D. BAKER,

Secretary of War.

* Subject to Memoranda 1 and 2, July 19, 1919.

THE OLYMPIA SHOW

ALTHOUGH the Motor Show, which opened at Olympia last Friday, is not directly concerned with aviation, visitors will be interested to note how that the wartime development of the aeromotor has influenced, in several directions, the design of engines for motor cars, notably in the more general adoption of overhead valves, the extended use of aluminium, and in some cases steel cylinders, and, further, in the adoption of air-cooled radial engines. Not only has aviation played a part on the engineering side, but the coachbuilder has also learnt some lessons, although many will come to the con-

clusion that he has still a long way to go before he secures the full advantage of modern research with regard to wind resistance, etc.

It is impossible in the space at our disposal to attempt to adequately deal with the exhibits, and we would refer our readers to our sister journal, *Auto*, which in its current issue reviews the whole of the car exhibits, profusely illustrated with a very large number of photographs and detail sketches. *Auto* is now on sale at all newsagents and booksellers, price one penny.

AIRISMS FROM THE FOUR WINDS.

ANOTHER of the martyred towns of the North of France has received "Mention" in an Order of the Day. Boulogne receives this distinguished honour. The "Mention" runs: "Boulogne sustained violent and murderous aerial bombardments for many months. In spite of the losses she suffered, the town kept her moral intact, and continued her activities without flinching."

"NEWS by Air and Wire" is the up-to-date and suggestive heading of the Far and Near news column of the *Daily Mail*. With the regular Royal mail in operation, the title is now officially endorsed and justified.

FOR four years anyway the Imperial War Museum is to find its home at the Crystal Palace, a lease for that period having been secured by the Museum authorities. It is true the Crystal Palace is not as convenient as Piccadilly, but the building and grounds are in many ways unique in their suitability for the purpose in view. Possibly under stress of war the facilities for reaching this somewhat God-forsaken point may have been improved. It is to be hoped they have, as the "exhibits," when sorted out, should be a very wonderful collection, containing interest of sorts for every man, woman and child. Aircraft and its side-issues, needless to say, will be a feature of the Show.

By the time the four years' lease is up, the authorities are of opinion that it will be possible to determine whether the interest displayed in the comprehensive collection of war relics is sufficient to warrant its transfer to a permanent home more centrally situated. Possession of the Palace will not be obtained until next March, and it is hoped to complete the arrangement of exhibits in time to allow of the opening of the museum in June. In order that there may be no avoidable delay after the building has been handed over to the organisers of the museum, exhibits are already being transferred to the Crystal Palace and stored in the grounds.

UNDER the heading of "A Swarm of Aircraft" another letter from Lord Fisher appeared in *The Times* last week, in which he again emphasises the vital importance of our future in the air. Lord Fisher writes:—

"By land and sea the approaching prodigious aircraft development knocks out the present Fleet, makes invasion practicable, cancels our country being an island,

and transforms the atmosphere into the battle-ground of the future.

"I say to the Prime Minister there is only one thing to do to the ostriches who are spending these vast millions ('which no man can number') on what is as useful for the next war as bows and arrows!—'Sack the lot.'"

THEN follows a characteristic postscript, longer than the letter itself, as under:—

"Postscript.—As the locusts swarmed over Egypt, so will the aircraft swarm in the heavens, carrying (some of them) inconceivable cargoes of men and bombs, some fast, some slow. Some will act like battle cruisers, others as destroyers. All cheap and (this is the gist of it) requiring only a few men as the crew.

"No one's imagination can as yet depict it all. If I essayed it now I should be called a lunatic. I gently forecast it in January, 1915, and more vividly on July 11, 1918. We have the star guiding us, if only we will follow it.

"Time and the Ocean and some fostering star—
In high cabal—have made us what we are!

"On Friday last the presiding genius at the 'Marine Engineers' said, 'The day of oil fuel and the oil engine had arrived.' In 1885 I was called an 'oil maniac.'—*Nunc Dimittis.*"

ON Monday of this week, Lord Fisher, in replying to critics, returns to the charge, as follows:—

"MARR'D"

"Do you hear the bleating of these sheep in your ears? We are going to hew Agag into pieces! (I refer to the moaning of the Admirals and to the keeping the best of the ships—exactly the same spirit as Saul.) There was the same bleating of the sheep and the same preservation of Agag when masts and sails were doomed and the engineer came into his own! Saul got kicked out for not 'sacking the lot.'

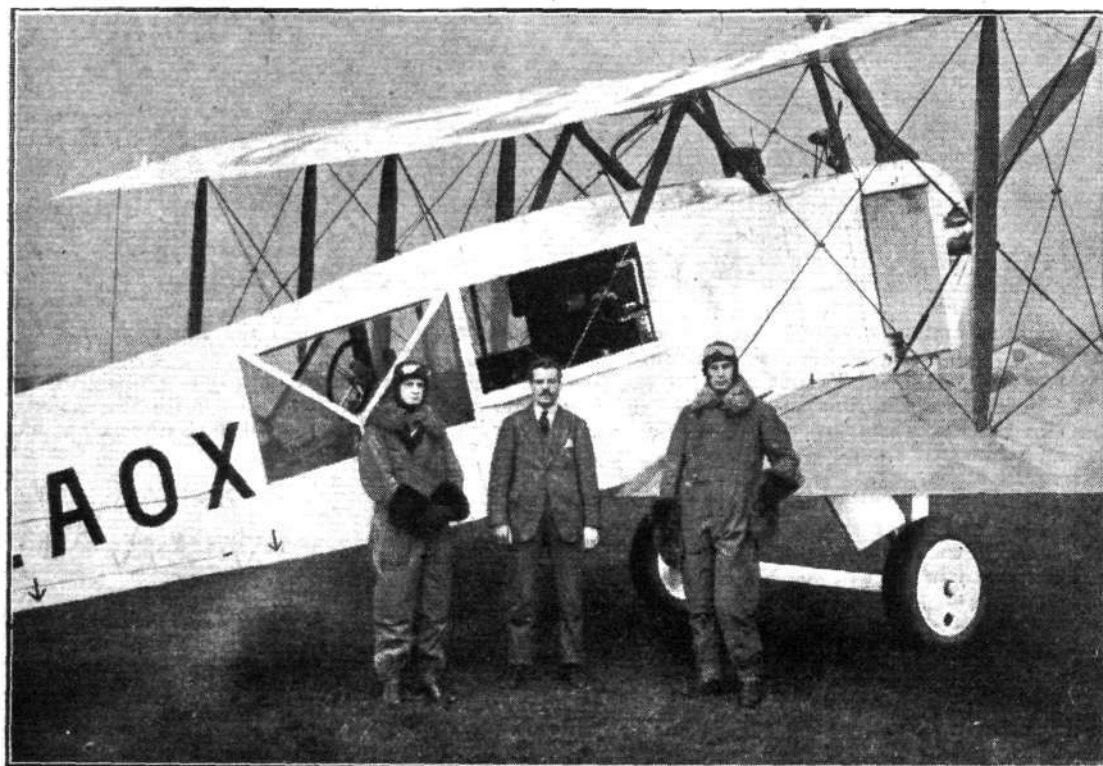
"The reason I put the word 'marr'd' at the head of this letter is that when, six months before the War, a Cabinet Minister of that period read my printed memorandum that German submarines would sink defenceless merchant ships with their women and children, he observed that I had 'marr'd' my memorandum by that prophecy! Don't let us have another 'marr'd' prophecy.

"The air controls the water. Unless all warships can get under the water they will be blown out of the water.

Some R.A.F. Impressions



Wing-Comdr. Meyler, D.S.O., M.C., commanding II Brigade R.A.F., Cologne, formerly Wing-Comdr. II Balloon Wing. He is an excellent revolver shot



Weatherbound : The Alliance-Napier machine entered for the flight to Australia has had to stand by owing to unsettled weather conditions. As soon as conditions improve, a start will be made. Our photograph shows ; on the left, Lieut. R. Douglas, M.C., D.C.M., the pilot of the machine ; on the right, Lieut. Ross, the navigator ; and, in the centre, Mr. J. A. Peters, the designer of the Alliance machine. The photograph gives a good idea of the cabin arrangement

Millions upon millions of money are still being wantonly wasted in the upkeep of ships that can't be used in war. When this winter the price of food and coal goes up, the masses will 'sack the lot.' A gust of fury will clear out this effete Parliament."

ALTHOUGH it would be hardly wise to 'Crash the Lot' so far as our Navy is concerned, as a true prophet in the past Lord Fisher holds no mean place, and whilst maintaining an adequate re-organised Fleet, fashioned upon lines of experience gained in the War, the airy "writing on the wall," as



FIRST INTERNATIONAL AERIAL MAIL : This week marks a milestone in aviation, inasmuch as the commencement of official international mail-carrying was inaugurated. Our photographs show the Paris mails being loaded into an Airco 4A, and the Government pennant, bearing the legend, "Royal Mail," being fixed to the rudder of the machine

set forth by Britain's tried and proven Old War Genius, should be translated into action.

New South Wales is to be carefully surveyed for the purpose of establishing an aerial service between Sydney and Broken Hill. Mr. Sidney Pickles—wonder if it really should be Sydney—who has not lost much time once he crossed the water for home, has undertaken the job at the request of the New South Wales Government. As an earnest of his view of the scheme, he has already indulged in a "flip" across the country, covering the distance of 624 miles between the two cities in 11½ hours flying time. Only hope S.P.'s report will be favourable to a regular aerial route being opened.

FROM "A Londoner's Diary":—

"A good deal of amusement is being caused just now in business circles by certain demobilised officers who insist on the Army rank. In some cases slight resentment is felt by men who have served through the War without gaining or accepting a commission. Two yarns on the subject have reached me.

"An ex-major, on taking up his pre-War position, decided to be known as 'Mr.' On asking for a business interview he sent in a message to the effect that Mr. A. would be glad if Mr. B. could see him. Mr. B., however, replied that Capt. B. was unable to grant Mr. A. an interview.

"Mr. A. promptly retorted by asking the messenger to say that Major A. desired to see Captain B. at once, and within a minute Captain B. came hurrying in to find out what his superior officer wanted.

"The other story is of a man in a good business position, who during his Army career only rose to the rank of corporal. A caller introduced himself as Captain X., and the answer he received was that Mr. — did not do business with officers, but only with gentlemen."

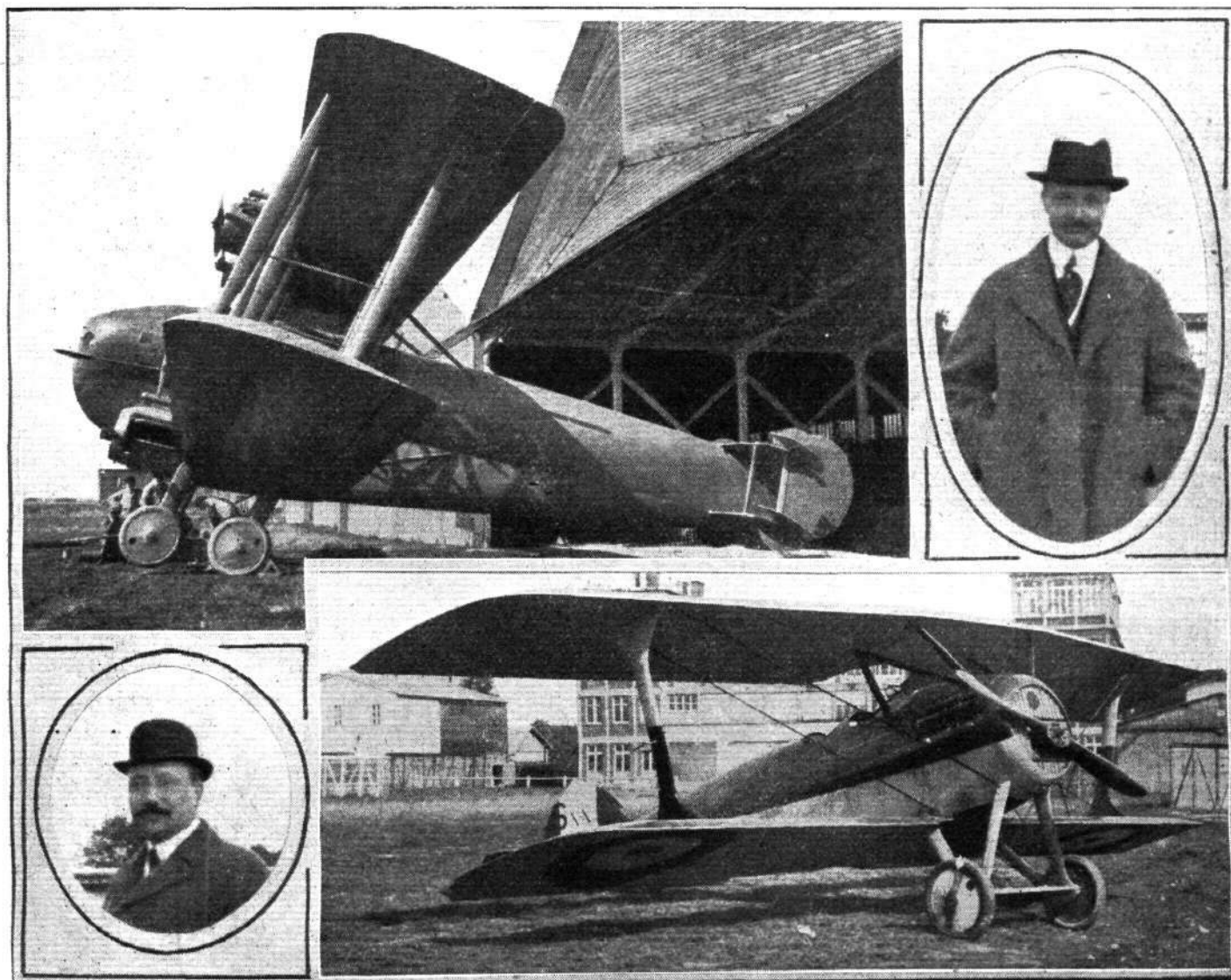
AN ancient monoplane side-wind. Why is the Government like an unfaithful goose? Because it doesn't stick to it propaganda.

THE *Observer* reprints the following extract from its issue of a hundred years ago:—

"During the aerial flight made by Messrs. Livingstone and Sadler, from Liverpool, such was the fright experienced by the game on the moors near Over Darwen over which the balloon passed, that great numbers, supposed to be from 60 to 100, flocked down into the Valley, some entering the houses and others alighting on the roofs, screaming in a loud and terrified manner."

It is difficult to believe that game could be so greatly alarmed by the mere silent passing of a balloon in those days, and the spectacle of respectable grouse or pheasants screaming on the roofs wants a bit of swallowing. When we recall the Hendon sky-larks singing as per programme in the midst of the pre-War Aerial Derby or the weekly Grand Speed Handicap, quite unconcerned at the noises of the Gnomes or the rattle of the Renaults, we can hardly think that bird nature has so completely altered. If Mr. Livingstone chanced to be an ancestor of the Brigadier-General of that name perhaps his descendant may favour us with a few remarks on the subject, from the family records.

ONE of the most envied members of the Royal Aero Club is Mr. J. Withers, of Hampstead, who holds the distinction of having the first Rolls-Royce chassis delivered to the public since the War. Needless to say, Mr. Withers placed his order early to avoid the rush, his enthusiasm being prompted by the regard he has had for his previous Rolls-Royce car, which was one of the regular features at Hendon before the War, where Mr. Withers acted as judge for the flying races on many occasions.



SOME SNAPS FROM FRANCE : The upper photograph shows the new Blériot 28-passenger machine with four Hispano-Suiza engines. The lower photo. is of a 300 h.p. Spad, flown by Sadi Lecoq. The upper inset is a photograph taken the other day in France of M. Blériot, while that in the lower left-hand corner shows M. Birkigt, the designer of the Hispano-Suiza engines

THE ROYAL AIR FORCE

London Gazette, November 4.

The following are granted permanent commns. in the R.A.F. in the ranks stated, with effect from Aug. 1:—Flight-Lieut. E. L. Williams, M.C. (A. and S.), Flying Officer A. C. Collier (A.).

The notification appearing in the *London Gazette* of Aug. 1 appointing the following officers to permanent commns. is cancelled:—Capt. M. O. F. England (O.), Capt. C. J. Galpin, D.S.O. (A. and S.), Capt. E. A. Jackson (T.), Capt. W. S. Newton Clare, M.B.E. (Ad.), Capt. C. S. MacNab (S.O.), Lieut. F. M. I. Watts, M.B.E. (T.), Lieut. R. B. T. Hedges (A.), Lieut. W. Myers, M.C., D.C.M. (S.O.), Lieut. J. M. McEntegart (T.).

The following temp. appointments are made:—
Staff Officers, 2nd Class.—(Q.).—Lieut. (Hon. Maj.) C. A. Cuthill, and to be actg. Maj. while so employed; from June 21, 1918, to Nov. 25, 1918. (Air).—Flight-Lieut. W. B. Callaway, A.F.C.; Sept. 1. (T.).—Squad. Leader F. J. Rutland, D.S.C., A.M.; Sept. 1. (P.).—Squad. Leader G. H. Thomson, O.B.E.; Sept. 1.

Staff Officers, 3rd Class.—(Air).—Flight-Lieut. W. P. Groves; Sept. 1. Flight-Lieut. A. W. Mylne; Oct. 4. (T.).—Flying Officer P. A. Simmons; Sept. 15. (P.).—Flight-Lieut. H. V. German; Sept. 25. Flying Officer G. D. Ashby; Sept. 26. (Q.).—Flight-Lieut. R. S. Sugden, A.F.C.; Sept. 27. Staff Officer, 4th Class.—(T.).—Flying Officer J. R. R. Harvey; Sept. 22.

Flying Branch.

Squad. Leader (actg. Wing-Com.) R. Grey relinquishes the actg. rank of Wing-Com. on ceasing to be employed, as Wing-Com. (A.); Oct. 8.

Capt. W. W. Carey-Thomas, M.C., is graded for purposes of pay and allowances as Maj. while employed as Maj. (A.); from May 1 to Sept. 29.

Capt. L. C. W. Trend is graded for purposes of pay and allowances as Capt. while employed as Capt. (A. and S.); from May 1 to July 25.

Lieut. R. E. Butler to be actg. Capt. while employed as Capt. (A.); from Nov. 1, 1918, to April 25 (substituted for notification in *Gazette* of Oct. 21).

Flying Officer V. M. C. B. de Sarigny to be actg. Flight-Lieut. while employed as Flight-Lieut. (K.B.); from Aug. 1 to Oct. 14.

The following Lieuts. are graded for purposes of pay and allowances as Capt. while employed as Capt. (A.):—H. R. Gardner, to June 1, W. D. Knibbs, to Aug. 31, H. B. Russell, to July 31; May 1.

Flying Officer (actg. Flight-Lieut.) F. Lord, D.F.C., relinquishes the actg. rank of Flight-Lieut. on ceasing to be employed as Flight-Lieut. (A.); Oct. 8.

Flying Officer A. V. Burbury, M.C., to be Flying Officer (A.), from (S.O.); Oct. 7.

Flying Officer A. F. Lang to be Flying Officer (O.), from (T.); ug. 1 (substituted for notification in the *Gazette* of Sept. 26).

Sec. Lieut. (Hon. Lieut.) G. L. Parkinson, M.C., to be Lieut.; June 22, 1918.

Pilot Officers to be Flying Officers:—C. H. W. Clarke; May 28. V. M. Mitchell; July 24. J. L. Booth; Oct. 1.

Sec. Lieut. G. A. Thompson (late Gen. List, R.F.C., on prob.) is confirmed in rank as Sec. Lieut. (A.); March 27.

Lieut. D. A. A. Shepperson (Lieut., Som. L.I.) relinquishes his commn. on ceasing to be employed, and is granted the rank of Capt.; Sept. 10 (substituted for notification in the *Gazette* of Sept. 19).

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. G. R. Harrison (Lieut., New Bruns. R.); Oct. 2. Capt. G. E. Chadwick, M.C. (Capt., E. Lan. R.); Oct. 12. Lieut. A. R. Walker (Lieut., Gord. Highrs.); Oct. 13. Capt. P. E. M. Le Gallais, A.F.C. (Lieut., R.-Suss. R.) Lieut. G. W. T. Pereira (Lieut., Som. L.I.); Oct. 15. Capt. E. A. Packe (Lieut., Oxf. and Bucks. L.I.); Oct. 16. Lieut. A. H. St. Clair, M.C. (Arg. and Suthd. Highrs.); Oct. 18. Sec. Lieut. (Hon. Lieut.) H. Cooper, M.C. (Lieut., R. Fus.); Oct. 20. Sec. Lieut. (Hon. Capt.) H. M. P. Hewett (Capt., R. Dgns.); Oct. 29.

(Then follow the names of 200 officers who are transfd. to the Unemployed List under various dates.)

Lieut. (Hon. Capt.) C. S. Emden, D.F.C., relinquishes his commn. on account of ill-health, caused by wounds, and is permitted to retain rank of Capt.; Oct. 27.

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—E. R. Bullimore (contracted on active service); Oct. 28. Lieut. W. L. Sumsion (caused by wounds); Oct. 29.

Lieut. (Hon. Capt.) F. L. Von Stieglitz (Capt., Connaught Rangers) relinquishes his commn. on account of ill-health contracted on active service; Nov. 4.

Sec. Lieut. J. McRobert relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Oct. 29.

Lieut. C. G. Ronaldson-Clark to take rank and precedence as if his appointment as Lieut. bore date Oct. 1, 1918.

Sec. Lieut. D. C. Sewell is dismissed the Service by sentence of General Court-Martial; Oct. 14.

The Christian names of Sec. Lieut. Alexander Alfred Phillips are as now described, and not "Alexander Arthur," as stated in the *Gazette* of Dec. 31, 1918.

The notification in the *Gazette* of Aug. 26 concerning Sec. Lieut. Alexander Alfred Phillips is cancelled.

The notification in the *Gazette* of June 24 concerning Lieut. E. I. Sutcliffe is cancelled.

The notification in the *Gazette* of Oct. 17 concerning Sec. Lieut. W. W. Smith is cancelled.

The notification in the *Gazette* of Sept. 12 concerning Sec. Lieut. F. W. B. Anderson is cancelled.

The notification in the *Gazette* of Oct. 24 concerning Sec. Lieut. S. T. Tipper, wherein this officer was shown "transferred to the Unemployed List," is cancelled.

The notification in the *Gazette* of July 1 concerning Lieut. J. R. Finlay is cancelled.

The notification in the *Gazette* of Aug. 19 concerning Lieut. W. Rodger is cancelled.

The notification in the *Gazette* of Oct. 14 concerning Lieut. R. C. Steele, D.S.O., is cancelled.

The notification in the *Gazette* of Oct. 31 concerning Capt. H. Hemming, A.S.C. (Lieut., Worc. R.), is cancelled.

Administrative Branch.

The following Capt. are graded for the purposes of pay and allowances as Maj. whilst employed as Maj.:—A. Wombwell; April 28. T. Gash; from May 1 to Aug. 5. W. F. Routley; from May 1 to Aug. 11.

Lieut. G. Oliver is graded for purposes of pay and allowances as Maj. whilst employed as Maj.; from May 19 to Aug. 5.

Flight-Lieut. J. A. Hartcup to be Flight-Lieut., from (S.O.); Sept. 10. (substituted for notification in the *Gazette* of Oct. 24).

Lieut. R. M. Nicholls to be Lieut., from (O.), and is graded for purposes of pay and allowances as Capt., whilst employed as Capt.; from March 13 to Sept. 23.

The following are graded for purposes of pay and allowances as Capt. while employed as Capt.:—Lieut. G. D. Rowden; from March 27 to July 29. Lieut. (Hon. Capt.) G. Davies; from May 1 to Oct. 10. Lieut. C. G. S. Fitzgerald; May 1. Lieut. A. L. Morris; from May 1 to Oct. 13. Lieut. D. G. Philippe, M.C., from (O.); May 1. Lieut. J. D. Loraine; from May 19 to Aug. 1. Sec. Lieut. (Hon. Lieut.) J. A. Bonnyman, M.B.E.; from May 1 to May 21. Sec. Lieut. J. Mellor; from May 1 to Aug. 9.

Sec. Lieut. G. R. Biggs is graded for purposes of pay and allowances as Capt. while specially employed, from (A.); April 10 (substituted for notification in *Gazette* of Oct. 3).

Lieut. (Hon. Capt.) A. C. T. Applin to be Lieut. (Hon. Capt.), from (K.B.) April 17.

Flying Officer (actg. Maj.) A. D. Carey relinquishes the actg. rank of Maj. on ceasing to be employed as Maj., from (S.O.); Oct. 8.

Sec. Lieut. R. R. W. Millward to be Lieut.; Aug. 21 1918 (substituted for notification in *Gazette* of Oct. 17).

Pilot Officer H. H. Firench to be Flying Officer; Sept. 18.

Sec. Lieut. F. McKeown is graded for purposes of pay and allowances as Lieut. while employed as Lieut.; from May 1 to Sept. 29.

Lieut.-Col. F. H. G. Playfair (Lieut.-Col., T.F. Res.) relinquishes his commn. on ceasing to be employed; Oct. 31.

(Then follow the names of 49 officers who are transfd. to the Unemployed List under various dates.)

Lieut. H. G. Mitchell (Hussars) relinquishes his commn. on account of ill-health contracted on active service; Oct. 23.

Sec. Lieut. (Hon. Lieut.) J. A. Redvers Buller relinquishes his commn. on account of ill-health contracted on active service, and retains the rank of Lieut.; Oct. 29.

The rank of Lieut. D. J. Fryer is as now described, and not Sec. Lieut., as stated in *Gazette* of Sept. 22.

The initials of Sec. Lieut. A. F. Johnston are as now described and not "A. P.," as stated in *Gazette* of May 27.

The notification in *Gazette* of April 25 concerning Sec. Lieut. J. Silvester is cancelled.

Technical Branch.

Squad. Leader (actg. Wing-Com.) C. Barber relinquishes the actg. rank of Wing-Com. on ceasing to be employed as Wing-Com., Grade (B.); Oct. 18.

Capt. G. D. Nelson, D.S.C., A.F.C., is graded for purposes of pay and allowances, as Maj. whilst employed as Maj., Grade (A.); from April 27 to July 31.

Lieut. A. E. Layton is graded for purposes of pay and allowances as Maj. whilst employed as Maj., Grade (A.); from May 1 to July 7.

Flight-Lieut. (actg. Squad. Leader) E. W. F. Cherry, O.B.E., to be Flight-Lieut., Grade (B.), and relinquishes the actg. rank of Squad. Leader on ceasing to be employed as Squad. Leader, from (S.O.); Oct. 22.

Capt. (actg. Maj.) W. P. Groves to be Capt., Grade (B.), and relinquishes the actg. rank of Maj. on ceasing to be employed as Maj., from (S.O.); July 26.

The following Lieuts. are graded for purposes of pay and allowances as Capt. while employed as Capt., Grade (A.):—B. S. Crimp, F. W. Clarke, D. Richardson; May 1. P. S. Laughton; June 2. L. L. W. Smythe; June 26. F. Thomas; Sept. 1.

Sec. Lieut. S. Jupp is graded for pay and allowances as Capt. while employed as Capt., Grade (A.); Oct. 9, 1918 (substituted for notification in the *Gazette* of May 27).

Sec. Lieut. (Hon. Capt.) F. C. Marsh is graded for purposes of pay and allowances as Capt. while employed as Capt., Grade (B.); May 1 (substituted for notification in the *Gazette* of Oct. 21).

Pilot Officer (Hon. Flying Officer) C. Bishop to be actg. Flight-Lieut. (without the pay and allowances of that rank) while employed as Flight-Lieut., Grade (B.); Sept. 15 (substituted for notification in the *Gazette* of Oct. 10).

Lieut. J. E. Ruthven to be Lieut., Grade (A.), from (Ad.); from April 1, 1918, to Sept. 11, 1918.

The following are graded for purposes of pay and allowances as Lieuts. while employed as Lieuts., Grade (A.):—Lieut. F. Thomas; from Feb. 10 to Aug. 21; Lieut. H. G. Cook, D.S.M.; April 7; Sec. Lieut. (Hon. Lieut.) R. O. C. Bush; Aug. 20, 1918. Sec. Lieut. G. C. Walsh; June 14.

Lieut. E. W. Lawrence is graded for purposes of pay and allowance as Lieut. while employed as Lieut., Grade (B.); Nov. 12, 1918 (substituted for notification in the *Gazette* of Oct. 14).

Sec. Lieuts. to be Lieuts.:—(Hon. Lieut.) W. Bagnall; April 2, 1918 (substituted for notification in the *Gazette* of Sept. 26). S. T. Kemp; Feb. 28 (substituted for notification in the *Gazette* of March 7).

Pilot Officers to be Flying Officers, without the pay and allowances of that rank:—F. A. Benfield, W. J. Coadwell, H. Fellows, C. H. Whitlock; Oct. 1.

Sec. Lieut. H. B. Brown to be Sec. Lieut., Grade (A.), from (Ad.); July 17, 1918 (substituted for notification in the *Gazette* of Oct. 3 and Sept. 5).

Sec. Lieut. H. Sleigh to be Sec. Lieut., Grade (B.), from (Ad.); Aug. 6 1918 (substituted for notification in the *Gazette* of Sept. 7, 1918).

Pilot Officer J. E. Neary to be Pilot Officer, from (Ad.); Oct. 23.

(Then follow the names of 62 officers who are transfd. to the Unemployed List under various dates.)

The notification in *Gazette* of July 8 concerning Capt. F. R. Hardie is cancelled.

The notification in *Gazette* of Oct. 17 concerning Capt. P. W. Goodchild is cancelled.

The notification in *Gazette* of Oct. 10 concerning Sec. Lieut. S. Japp is cancelled.

Medical Branch.

Capt. (actg. Maj.) H. R. B. Hull (Surgeon-Lieut. R.N.) relinquishes his command on re-ersion to R.N. (Oct. 15).

(3 officers transfd. to the Unemployed List.)

Memorandum.

Flying Officer W. H. Holroyd to be Hon. Flight-Lieut.; Aug. 31, 1918.

The following Temp. Hon. Lieuts. relinquish their commns. on ceasing to be employed:—J. Beek; April 16. W. B. Gibson; Sept. 16. B. Coulam, J. J. A. Gilmore, J. B. Gott, F. Green, F. R. Newton, J. H. Woodruff; Oct. 16.

(4 officers transfd. to the Unemployed List.)

(Then follow the names of 7 Cadets who are granted hon. commns. as Sec. Lieuts.)



London Gazette, November 7

The following are granted permanent commns. in the ranks stated:—
Flight Lieutenant.—L. Wanless-O'Gowan (A.); Aug. 1.
Flying Officer.—E. D. G. Galley, M.C., A.F.C. (A.); Aug. 1.
 The notification appearing in *Gazette* of Oct. 28 appointing Flight-Lieut. J. B. Walmsley, D.F.C. (A.), to a permanent commn. is cancelled.
 The rank of Flight-Lieut. E. C. Emmett, M.C., D.F.C., is as now described, and not "Capt." as stated in *Gazette* of Oct. 28.
 The name of Flying Officer R. Jones is as now described, and not R. Jones, M.C., as stated in *Gazette* of Aug. 1.

Flying Branch.

Wing Com. A. D. Cunningham, O.B.E., to be Wing Com. (A'ship), from Dep. Dir.; Nov. 3.
 Maj. (actg. Lieut.-Col.) R. J. F. Barton, O.B.E., to be Maj. (A.) and relinquishes actg. rank of Lieut.-Col. on ceasing to be employed as Lieut.-Col., from (S.O.); March 3.
 Lieut. G. F. Moody is graded for purposes of pay and allowances as Capt. while employed as Capt. (A. and S.), from May 1 to Sept. 21.
 Flying Officer W. K. Sutton relinquishes the grading for pay and allowances as Flight-Lieut. on ceasing to be employed as Flight-Lieut. (A.); Oct. 18.
 Flying Officer (actg. Flight-Lieut.) W. H. Park, M.C., relinquishes actg. rank of Flight-Lieut. on ceasing to be employed as Flight-Lieut. (A. and S.); Oct. 27.

Pilot Officer L. J. Chandler to be Flying Officer; Oct. 1.
 Lieut. V. W. Kilroe relinquishes his commn. on ceasing to be employed and is permitted to retain his rank; July 23.
 Lieut.-Col. D. Mackenzie (Maj., E. Lancs. R.) relinquishes his commn. on ceasing to be employed, and is permitted to retain his rank; Nov. 1.
 The following relinquish their commns. on ceasing to be employed:—
 Lieut. J. R. Taylor (Lieut., Rif. Bde.); July 27, 1918. Lieut. F. O. Rose (Lieut., Essex R.); Oct. 9. Capt. W. E. Molesworth, M.C. (Capt., R. Munster Fus.); Oct. 15. Lieut. R. A. Denne (Lieut., Wilts. R.); Oct. 22. Lieut. H. N. Loch, D.F.C. (Capt., Gurkha Rif.); Oct. 24. Lieut.-Col. R. H. Morne-mant, O.B.E. (Surg. Com., R.N.); Oct. 31. Col. B. H. H. Cooke, C.M.G., C.B.E., D.S.O. (Lieut.-Col. extra regimentally employed), Capt. H. W. M. Paul (Capt., Middx. R.); Nov. 1. Lieut.-Col. A. C. H. MacLean (Maj., R. Scots); Nov. 5. Lieut. A. T. Essex (Sec. Lieut., Brit. W. Indies R.); Nov. 6.

(Then follow the names of 126 officers who are transfd. to the Unemployed List under various dates.)

Maj. L. F. Richard (Capt., Royal R. of Art.) relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; Sept. 30.

Capt. P. S. Fisher, D.S.O., D.S.C., relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; Oct. 30.

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—C. H. P. Hughes; Oct. 20. (substituted for notification in the *Gazette* of June 6). F. H. Robinson (contracted on active service), J. Thompson (contracted on active service); Oct. 30. H. R. Utley (caused by wounds); Oct. 31. R. E. Whittingham (contracted on active service); Nov. 1. J. A. Nolan; Nov. 2 (substituted for notification in the *Gazette* of Jan. 14).

Sec. Lieut. W. A. Down relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Nov. 4.

Sec. Lieut. A. W. Simon (Lieut., R. Sussex R.) relinquishes his commn. on account of ill-health; Oct. 30.

Sec. Lieut. G. B. Allen to take rank and precedence as if his appointment as Sec. Lieut. bore date March 30.

The rank of Lieut. W. C. Treen, M.C., D.F.C., D.C.M., is as now described, and not "Sec. Lieut." as stated in the *Gazette* of July 4.

The surname of Lieut. C. E. Kendall (Lieut., R.F.A.) is as now described, and not "Rendall" as stated in the *Gazette* of May 30.

The notification in the *Gazette* of June 20 concerning Sec. Lieut. J. Atkinson is cancelled.

The notification in the *Gazette* of Aug. 5, concerning Sec. Lieut. R. C. Williams is cancelled.

The notification in the *Gazette* of Aug. 19 concerning Lieut. R. S. Jameson is cancelled.

The notification in the *Gazette* of Oct. 10 concerning Lieut. A. T. Essex is cancelled.

The notification in the *Gazette* of Oct. 14 concerning Lieut. C. W. Wridgway is cancelled (*Gazette* of Sept. 12 to stand).

The notification in the *Gazette* of Oct. 21 concerning Lieut. E. H. Stanes, M.C., is cancelled.
 The notifications in the *Gazette* of Oct. 24 concerning Lieut. W. S. Campbell and Lieut. J. R. Field are cancelled.

Administrative Branch

Flight-Lieut. C. S. McNab to be Flight-Lieut., from (S.O.); Oct. 1 (substituted for notification in the *Gazette* of Oct. 14).

Flying Officer J. Keyes to be Flying Officer, from (S.O.); Oct. 9.

Sec. Lieut. (Hon. Lieut.) B. Attenborough to be Lieut.; April 2, 1918.

Pilot Officer (actg. Flight-Lieut.) N. Bucknall relinquishes the actg. rank of Flight-Lieut. on ceasing to be employed as Flight-Lieut.; Oct. 13.

Sec. Lieut. A. L. Kidd (late Gen. List, R.F.C., on prob.) is confirmed in rank as Sec. Lieut.; May 3 (substituted for notification in *Gazette* of July 22, wherein this officer was reclassified as Lieut. (Ad.), from (O.)).

(Then follow the names of 32 officers who are transfd. to the Unemployed List under various dates.)

Lieut. K. H. Leake, M.C. (L. N. Lanc. R.) relinquishes his commn. on account of ill-health caused by wounds; Oct. 25.

The notification in *Gazette* of Oct. 3 concerning Sec. Lieut. W. L. Wade is cancelled (*Gazette* of Sept. 9 to stand).

The notification in *Gazette* of Jan. 10 concerning Lieut. W. T. Jourdan is cancelled.

Technical Branch

Flight-Lieut. (actg. Sqdn.-Leader) J. Curtis relinquishes the actg. rank of Sqdn.-Leader on ceasing to be employed as Sqdn.-Leader, Grade (A.); Oct. 22.

Flying Officer (actg. Flight-Lieut.) S. J. Gardiner relinquishes the actg. rank of Flight-Lieut., on ceasing to be employed as Flight-Lieut., Grade (A.); Oct. 6.

Lieut. H. E. K. Eccles, M.C., to be Lieut., Grade (A.), from (Ad.); Jan. 11.

Flying Officer A. F. Lang to be Flying Officer, Grade (A.), from (O.); Oct. 10.

Sec. Lieut. (Hon. Lieut.) L. C. Gandy to be Lieut., without the pay and allowances of that rank; May 4, 1918 (substituted for notification in *Gazette* of March 7).

Sec. Lieut. A. E. Wycherley to be Sec. Lieut., Grade (B.), from (Ad.); May 1, and is graded for purposes of pay and allowances as Lieut. whilst employed as Lieut., Grade (B.); May 1.

S. A. Gordon (Temp. Sec. Lieut., E. Kent R.) is granted a temp. commn. as Sec. Lieut., Grade (A.); June 10, 1918, with seniority from April 1, 1918 (substituted for notification in *Gazette* of Dec. 13, 1918, wherein this officer was shown as "Administration").

(Then follow the names of 44 officers who are transfd. to the Unemployed List under various dates.)

Capt. J. McG. Robertson relinquishes his commn. on account of ill-health (contracted on active service), and is permitted to retain his rank; Oct. 30.

Physical Training Branch

Lieut. J. Butterfield relinquishes his commn. on ceasing to be employed, and is granted the rank of Capt.; Sept. 26.

Medical Branch

Flight Lieuts. to be Sqdn.-Leaders:—W. A. S. Duck; April 11. A. E. Pantér, A. R. Sharrod; Oct. 3.

(1 officer transfd. to the Unemployed List.)

Dental Branch

Sec. Lieut. (actg. Capt.) G. W. Allen to be Sec. Lieut. (from T.), and retains his actg. rank while so employed; June 3, 1918 (substituted for notification in the *Gazette* of June 11, 1918, in which he was shown under "Medical Branch.")

Memoranda

The following Prob. Flight Officers are granted Hon. commns. as Sec. Lieuts.:—F. C. Champneys; Jan. 13. W. C. Bettles; Jan. 29. A. L. Coulson; Feb. 2. D. H. Couch; Feb. 6. J. G. Butcher, C. T. Child; Feb. 20. W. H. Boorne; March 13. J. V. L. Burder; April 30. W. I. Beckett; May 15.

The following Temp. Hon. Lieuts. relinquish their commns. on ceasing to be employed:—R. E. Barnard, F. Butt, A. Downie, W. J. Southwell, F. G. Wedge, C. J. Whall; Sept. 16.

(3 officers transfd. to the Unemployed List.)

The following relinquish their commns. on account of ill-health:—Lieut.-Col. J. D. Markworth, C.B.E. (R. W. Surrey R.); Oct. 24. Lieut.-Col. T. A. Monckton, O.B.E. (contracted on active service), and is permitted to retain his rank; Oct. 30.

AVIATION IN PARLIAMENT

Civilian Discharges

MR. A. SHORT asked the Under-Secretary of State to the Air Ministry whether he is aware that a number of civilian employees are being discharged from the Royal Air Force; that 1,433 civilians at present employed at No. 1 Stores Depot, Kidbrooke, are to be reduced to 450 by the end of the year; and that the total number of between 6,000 and 7,000 employed by the Royal Air Force is to be reduced to 3,280 by the end of the year; whether he will consider the possibility of carrying out these discharges more gradually, in order to give the men a better chance of finding employment elsewhere; and whether he can state what action is being taken in conjunction with the Ministry of Labour with a view to the absorption of the discharged men into other employment?

Maj.-Gen. Seely: Subject to the correction of the figure 3,280 to 3,480, the answers to the first three parts of the hon. gentleman's question are in the affirmative. In order to afford the men discharged better opportunities of obtaining employment, the desirability of spreading the discharges over as long a period as possible has already received very careful consideration. I have received two deputations on the matter and have discussed the situation fully with representatives of the men concerned. As a result the period has been appreciably lengthened. I much regret the hardship caused, but it is impossible to still further delay the discharges, in view of the very large reductions in the Air Force. The closest touch is maintained by the Air Ministry with the Ministry of Labour, and advanced information is given of impending discharges.

Leave of R.A.F. Officers

LIEUT.-COL. SIR FREDERICK HALL in the House of Commons on November 4 asked the Secretary for War if a considerable number of officers of the R.A.F. who volunteered for service in Russia were sent out at short notice and without even the usual embarkation leave; if it was understood that they would be given leave privileges when opportunity occurred to make up for this; and if now on their return these officers, who in many cases have served long periods in the trying Russian campaign without any leave, are being demobilised and struck off the pay-sheets on their arrival back in this country?

MR. PARKER (Lord of the Treasury): I have been asked to take this question. The reply to the first part is that owing to the urgency of the demands many officers were sent out at short notice. Very few, if any, went without a few days' leave. To the second part, that no communication to the effect mentioned was made by the authority of the Air Ministry. The answer to the third part of my hon. and gallant friend's question is that all officers returning from Russia who had not been recommended for permanent or short-service commissions were informed that their demobilisation must be carried out as soon as they returned to this country; that the question of leave for service in Russia was being dealt with; and that if it was decided they were eligible for leave their demobilisation would be post-dated for the period sanctioned in order to enable them to draw pay for that period. Since then it has been decided to grant 14 days' leave for each six months' service in Russia, and action is being taken to post-date the demobilisation of officers entitled to leave under this ruling. No leave is admissible for service of less than six months in Russia.

SIR F. HALL: May I ask the Secretary of State for the Air Department whether he is aware that in reply to a supplementary question a few days ago he informed me that these officers had not been summarily discharged, and that leave had been granted; and can he say whether if any of these officers have been discharged on their arrival in this country and have not had proper leave, he will take steps to see that in lieu of leave, since they are demobilised, they are paid for that period?

MR. CHURCHILL: I will inquire into the matter. Certainly they should have their proper leave.

SIR F. HALL: Or pay in lieu of leave.

COL. YATE: What is their proper leave? Is it not fair that an officer on demobilisation should be given 28 days' grace the same as the men?

MR. CHURCHILL: I will not say. I should like to refresh my memory.

R.A.F. in Persia

LIEUT.-COM. KENWORTHY asked the Secretary of State for War how many members of His Majesty's Army and the R.A.F., approximately, are at present in Persian territory; how many members of His Majesty's Indian

Army are in Persian territory; for what purpose are they there; and when it is expected that they will be withdrawn?

Mr. Churchill: The total number of troops in Persia is approximately 11,175, of whom 10,100 are natives of India. The second and third parts of the hon. and gallant Member's question should be referred to the Foreign Office.

Disposal of R.A.F. Stations

MAJ. GLYN on November 6 asked the Under-Secretary of State to the Air Ministry how many Air Force stations, camps, and aerodromes have been handed over for disposal to the Ministry of Munitions since the Armistice; how many are to be handed over; what steps are being taken meantime to protect the material and property; and how many officers and other ranks are so employed, and at what approximate cost?

The Under-Secretary of State for Air (Maj.-Gen. Seely): In reply to the first part of my hon. and gallant friend's question, there have been surrendered by the R.A.F. since the Armistice:—

- | | |
|----------------------------------------------------------------------------------------------------------------------|------|
| (a) Stations consisting of land only (i.e., landing grounds and camping grounds) | 124 |
| (b) Stations consisting of land and buildings | 122* |
| (c) Stations at which aerodromes have been released, whilst buildings are still required for R.A.F. purposes | 6 |

* Including 10 transferred to other departments.



Anglo-Swiss Aerial Traffic

A TEMPORARY agreement permitting British airmen to land in Switzerland, and *vice versa*, has been concluded here, Col. Beatty, of the Civil Aviation Department, signing on behalf of Great Britain, reports *The Times* correspondent at Berne. He adds "the agreement, which will lapse automatically when the International Air Convention comes into force, much resembles it, except in one particular—namely, that Switzerland is unable to agree to the clause in the Convention laying down that there shall be no aerial traffic except between the signatories of the Convention. It will be remembered that the Allies reserved to themselves the right in the Peace Treaty to land in former enemy countries, but Switzerland, being neutral, would not enjoy this right, and would thus, according to the Convention, be unable to deal by air with her German and Austrian neighbours. The agreement, which will come into force as soon as France makes a similar arrangement with Switzerland, does not, therefore, hinder Swiss aeroplanes from landing in Germany, as would be the case if the Convention were signed; but it gives British aviators the right to land in Switzerland without special permission.

"The Swiss have only one important aerodrome—namely, Dubendorf, near Zurich, which Col. Beatty visited today. Larger hangars, new indication marks, and other aids to aviators will be erected for the benefit of foreign fliers. Maj. Isler, the airman who recently landed on the Jungfrau—he is chief of Switzerland's military aviation—anticipates that Dubendorf will become the most important landing-place for British airmen on their way to Rome and south-east Europe.

Peace Through the Air

THE formal presentation to South Africa of the D.H. 9 aeroplane subscribed for by the citizens of Birmingham took place on Saturday at the Castle Bromwich ground. The Lord Mayor, Sir David Brooks, presented the aeroplane to Lord Desborough, President of the Imperial Air Fleet Committee, who asked the Lady Mayoress to christen the city's gift "The City of Birmingham." Lord Desborough then asked the Hon. R. A. Blankenberg, Acting High Commissioner for South Africa, to accept the machine on behalf of the South African Government.

Previous to this ceremony the Lord Mayor and the President of the Chamber of Commerce entertained the company to luncheon.

Lord Desborough, in proposing the toast of "South Africa and the Imperial Air Fleet aeroplane, 'City of Birmingham,'" said he believed the future, both of commerce and of war, if war we were still to have, would be in the air. Trade in the future would follow the 'plane.

Maj.-Gen. Sir Frederick Sykes, Controller-General of Civil Aviation, said that it was hoped soon to set up the International Commission for Air Navigation, which might perhaps develop in Mr. Kipling's prophecy of an Aerial Board of Control. It would be in permanent session, and would deal with and assist international civil flying generally. He said:

"Aviation is the antithesis of Chauvinism. Much of the mutual antagonism and mistrust between peoples of different countries has been attributable to lack of easy inter-communication and consequent misunderstanding. The cable and wireless telegraphy have assisted in the breaking down of this party-wall between the nations. Aviation will do

Until the strength of the after-war Air Force is definitely decided I am unable to reply to the second part. In regard to the third part, arrangements are being made whereby civilian caretakers will, pending the sale of buildings, be placed in charge of stations cleared of R.A.F. material, vacated by R.A.F. personnel and handed over for disposal. In some cases R.A.F. personnel remain in charge pending the appointment of civilian caretakers and in a few other cases the local police have been requested to exercise supervision over empty buildings. I am unable to give the information asked for in the last two parts owing to the frequent fluctuations during the process of rapid reduction.

Maj. Glyn: May I ask whether the Ministry of Munitions bear no cost at all of the care of these aerodromes, and whether this cost has been put on the Air Estimates?

Maj.-Gen. Seely: It is a fact that when the Disposal Board are unable to take over stores the R.A.F. personnel has to be retained to look after them, and that of course adds to the charge on the R.A.F., but the matter is now being finally considered, and I hope we shall avoid any delay in the future.

Mr. Billing: May I ask whether handing over to civilian control is not likely to increase the cost of that control while certain personnel of the R.A.F. remains?

Maj.-Gen. Seely: The question as to which is the more costly is a very elaborate calculation between the R.A.F. and the civilian control, but there is obviously an advantage in handing it over to the civilian personnel in order that the small R.A.F. personnel retained may be engaged in their proper duties.

more, as it will afford swift opportunities for the intercourse of living personalities and provides a means of transport that is unimpeded by natural barriers.

"I cannot help thinking what an interest Mr. Joseph Chamberlain would have taken in Empire aviation and what a champion we should have found in him. I wish that this aeroplane could be the first to fly to South Africa, and thus realise—though in another form—the dream of Cecil Rhodes of direct communication between Cairo and the Cape; but although we are advanced in our plans for establishing aerial routes which eventually will link together all portions of the Empire, the time is not yet ripe.

"The way of escape and the future in all its aspects depends upon education, backed by real belief, and I think the Imperial Air Fleet Committee are doing good work in trying to educate public opinion in regard to the air. We must follow up the advance that was made in this direction last month when international flying on an agreed basis was signed by eleven separate Powers. This is the most revolutionary break with international tradition since races first set limits to the encroachment of the stranger, and when the civilised world is intersected by a system of air routes nations will learn that it is as absurd to declare war upon another as it would be for the citizens of Birmingham to declare war upon the citizens of Crewe."

The W.R.A.F. Enquiry

THE Select Committee which has been enquiring into the dismissal of Miss Violet Douglas-Pennant from the W.R.A.F. concluded the taking of evidence on Tuesday. The Chairman, Lord Wrenbury, said that though the Committee would report in due course, they were going to take the unusual step of announcing some of their conclusions. Grave accusations had been hanging for months over the heads of several persons, and they were entitled to the Committee's conclusions upon them.

"The Committee find the accusation of immorality between Colonel Janson and Miss Glubb to be untrue. The accusation of general immorality at Hurst Park Camp is entirely unsupported by any evidence. The accusation that Colonel Bersey desired immorality to continue at Hurst Park Camp is found to be untrue. The accusation that General Livingstone and Colonel Bersey desired, by improper means, to allow to continue a state of things under which young girls were taken to London and brought back, often drunk, in the early hours of the morning, is not supported by evidence."

Lord Wrenbury added that the above were the unanimous findings of every member of the Committee.

Messrs. Simmons and Simmons, of 18, Finch Lane, Cornhill, state that Brigadier-General Livingstone and Mr. W. C. Bersey have instructed them to issue writs against Miss Violet Douglas-Pennant for libel.

Aerial Signposts

THE Air Ministry announces that the following "Notice to Airmen" is issued:—

"The roofs of the following railway stations are now marked with the name of the place in large white letters:—

- "REDHILL (S.E. and C. Railway).
- "TONBRIDGE (S.E. and C. Railway).
- "ASHFORD (S.E. and C. Railway).
- "HITCHIN (G.N. Railway)."



Deaths

Capt. GERALD FETHERSTON KNIGHT, who died on October 30 at the R.A.F. hospital, Eaton Square, was the son of Robert Lynam and Lena Fetherston Knight, and grandson of Rev. Robert Knight, late of "Stanmore," Torquay.

Capt. CLAUD HARRY, R.A.F., D.F.C., who was reported missing on October 29 and now known to have died on November 7, 1918, was the youngest son of Mr. and Mrs. HENRY STOKES, 24, Granville Park, Blackheath.

Lieut. BRODIE WYATT WILSON, 19th London Regt., attached R.A.F., who was reported missing on September 23, 1918, and is now presumed killed on that date, was the eldest son of Rev. H. E. and Mrs. Wilson, Little Billing Rectory, Northampton.

To be Married

The engagement is announced between Mr. W. S. ALLEN, R.A.F., only son of W. Allen and the late Mrs. Allen, of 50, Gloucester Terrace, W. 2, and CLARA ELEANOR, only daughter of the late H. G. JOHNSON and Mrs. Johnson, of Long Close, Winchester.

The engagement is announced between Mr. J. A. WEATHERHEAD BINNIE, R.A.F., son of Mr. David Dreghorn Binnie and Mrs. Binnie, of Glasgow, and OLAVE, only daughter of Mr. CAMPBELL HARRIS and Mrs. Campbell Harris, of Eastbourne.

The engagement is announced between Capt. T. WALFORD CAVE, M.C., R.F.A. and R.A.F., eldest son of the Rev. Thomas Cave, vicar of St. James, Handsworth Wood, Birmingham, and GWENDOLIN MARY, only daughter of Herbert H. and Mrs. PIGGIN, of Hendon Hall, N.W.

The engagement is announced between Lieut. Com. THEODORE ELMSLEY, A.F.C., R.N., son of the late Remy and Mrs. Elmsley, of Toronto, Canada, and JOAN, only daughter of the late EDWARD and Mrs. JACKSON, of St. Andrews, Fife.

The engagement is announced between Flight-Lieut. CECIL GEORGE MATHEW, R.A.F., younger son of A. C. Mathew, of Cranford, Church Crookham, Hants, and EMILY GEALE HESTER LOWRY, youngest daughter of the late Col. C. M. ALEXANDER and Mrs. Alexander, of Termon, Carrickmore, Tyrone.

The engagement is announced between Lieut. W. ROLAND ROGERS, R.A.F., only son of the late Samuel Rogers, of Preston Hill, Penkridge, Staffordshire, and of Mrs. Rogers, Beaumont, Yapton, Sussex, and grandson of the late William Rogers, of Mount Pleasant, Messcliffe, Shropshire, and MURIEL, only daughter of the late LIONEL ROBERT BARKER, elder son of the late Frederick Barker, of Gaskyns, Rudgwick, Sussex, and Mrs. Barker, of Hobb's Farm, Yapton, Sussex.

The marriage has been arranged, and will take place early in December, between STEPHEN WHITE SYMONS, late R.A.F., son of the late William Christian Symons and Mrs. Symons, of 129, Beaufort Street, Chelsea, and MARGARET LE BRASSEUR, eldest daughter of Mr. and Mrs. Robert Le Brasseur, of Sunnycote, Rosslyn Hill, Hampstead.

Items

The first Reunion dinner for all officers of 110 Squadron, R.A.F., will be held at the Trocadero on Saturday, November 15, 7 o'clock for 8. Any officer not having received previous intimation should apply for particulars to Major Nicholl, R.A.F., Eastchurch, Kent.



SIDE-WINDS

ROLLS-ROYCE, LTD., announce that there is no truth whatever in the rumour that they intend to place on the market during the year 1920 a Rolls-Royce chassis of 20 h.p.

DURING the week ending November 5, 1919, the Handley Page London-Paris service carried 39 passengers and 2,588½ lbs. of freight. The London and Paris flights were carried out daily in rain and wind-storms, and proved that, despite the inclement weather associated with this period of the year, scheduled air flights are possible. On November 3, a Breguet machine, working in conjunction with the Handley Page Transport, Ltd., flew from London to Paris after a four-hour trip through wind, hail and rain. This was the only machine in the Continental air service to accomplish the journey. On November 1 a Handley Page aeroplane carried 12 passengers, 500 lbs. of freight, and nearly 400 lbs. of personal luggage to Paris through driving rain. Lieut.-Colonel Robert Loraine, the actor and pilot, being amongst the occupants.

DURING the same period 17 passengers and 558½ lbs. of freight were carried on the London-Brussels service. The restrictions regarding the carrying of freight to Belgium by air have now been removed.

THERE have been several attempts to produce something which shall perpetuate the record of service of individuals or units in the Great War, but a good many of the results have, to say the least, not been conformable to the canons of good taste. It is a pleasure, therefore, to see the excellent work of the Birmingham Guild, Ltd., of Great Charles Street, Birmingham, in this direction. It consists of a plaque bearing the regimental crest, mounted on a tablet of well-seasoned dull mahogany, and framed. The plaque itself is reproduced in bronze, heavily silver-plated and toned to an old silver colour, the crest and motto being modelled in

low relief by distinguished artists. In addition, where required, a small silvered plate is mounted, below the plaque, on which the name, rank and dates of service may be engraved. The whole forms a permanent memorial, chaste and dignified, the combination of the old silver and the rich



The memorial plaque produced by the Birmingham Guild, Ltd.

but subdued colouring of the mahogany, giving a pleasing result. Among the badges reproduced is that of the R.A.F., one of which was recently sent to Air Vice-Marshal Trenchard, who expressed his delight with it, and stated that it should be preserved in his office at the Air Ministry. The dimensions

of the full service record tablet are: Overall size of back plate, 18 ins. by 13 ins.; size of metal plaque, 7 ins. by 4½ ins.; size of inscription plate, 7 ins. by 2 ins.; and, with a brief inscription, the price is four guineas complete. The crest plaque, suitably mounted on a smaller tablet, can be had for two guineas. In this connection it should be noted that the tablets can be obtained from Messrs. Vickery's, of Regent Street, Berkeley, Ltd., of Victoria Street, and Selfridge's.

ONE of the most striking exhibits at Olympia is the new Hispano-Suiza car, and it has a special interest for all concerned with aviation, being largely the outcome of the wide experience gained by this company in the building of aero-engines. It is said that 50 per cent. of the aeroplanes used by the Allies on the various fronts were fitted with Hispano-Suiza motors, and no fewer than 21 different firms were entrusted with the manufacture, 14 of them being French firms. Including the output of the companies manufacturing under licence, a grand total of approximately 50,000 Hispano-Suiza engines were made during the War. It is obvious that an enormous amount of valuable experience was thus acquired, and it is the benefit of this which is embodied in the new six-cylindrical car.

Two recent worlds' records gained by Hispano-Suiza aero-motors are the height record of Lieut. Casale and the speed record of Lieut. de Romanet. But some of the greatest exploits with which the name of the Hispano-Suiza is associated are the brilliant deeds of the "Stork" Squadron of the French Air Service, for the immortal Guynemer and his brave comrades of that wonderful squadron achieved their most notable triumphs on Spads so engined. This fact has been the inspiration of a most distinctive and artistic motor



The charming mascot on Hispano-Suiza cars

mascot. It consists of a silver stork in full flight, and it will be the exclusive mark of the new Hispano-Suiza cars. In the grace and elegance of its lines there is a suggestion of swiftness in this mascot which indicates with great appropriateness the close connection between a famous chapter in the history of the War in the air and the evolution of a wonderful car. Congratulations to M. Birkigt, the designer of these motors, and the directors of "Entente Industrielle (England)" Ltd., the sole concessionaires for Great Britain.

MESSRS. C. C. WAKEFIELD AND CO., LTD., were unlucky in the ballot for space at the Motor Show, and had to be content with a modest stand in the accessories section. They are, however, exhibiting a range of their famous "Castrol" motor oils and the well-known "Castrol R," so well known to all aviators, which has so long a record of success on all

types of aero-engines. As one of their representatives remarked the other day, "a small stand but a big reputation!"

ON Thursday, November 6, Maj. Draper gave special flights at Hendon on the B.A.T. saloon passenger machine in the presence of visitors from Australia and Spain. Passengers were taken from these countries, all of whom expressed delight at the comfortable saloon, and they were also particularly impressed by the remarkable smooth landing. The Amsterdam service is still in operation, but last week, owing to weather conditions, no machine left this country for Holland.

NEW COMPANIES REGISTERED

AUTOVEYORS, LTD., 36, Victoria Street, S.W.—Capital £100, in £1 shares. Aircraft, motor and motor launch dealers and manufacturers, etc. First directors: L. H. Barton and C. R. Cook.
LIBERTY ENGINEERING CO., LTD., 1, Warwick Street, W.1.—Capital £1,000, in 1s. shares. Mechanical, motor, aviation, and general engineers, etc.

AERONAUTICAL SPECIFICATIONS PUBLISHED

Abbreviations:—cyl.=cylinder; I.C.=internal combustion; m.=motors.

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published November 6, 1919

- 14,675. J. MOSTON. Automatic control of aircraft. (133,401.)
 - 16,029. SPERRY GYROSCOPE CO. Visual indicating-devices. (133,410.)
 - 16,507. D. J. MOONEY. Aeronautical machines of metal. (133,444.)
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